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GLOBAL DATA MONITORING REPORT

April, 1997

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of AIREP/ASDAR reports received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-12 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

N.B. 500 km SATEMs are no longer assimilated into the UKMO global Unified Model. Both 500 km and 120 km SATEMs were replaced on 16th April 1996 by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS (from NOAA-12 and NOAA-14).

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area
10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from Bracknell global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

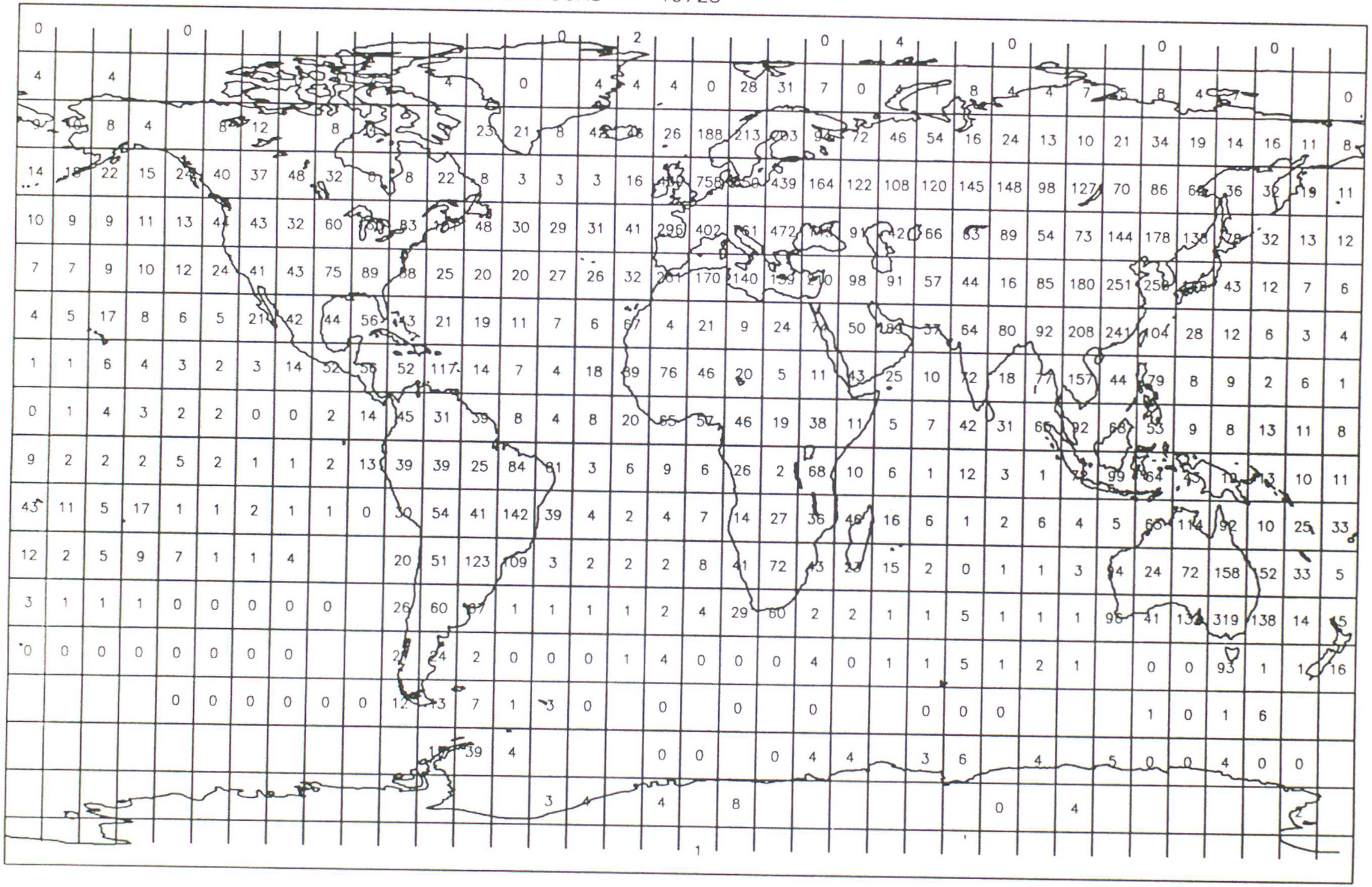
1.|bias|	≥ 4 hPa	(pressure),
	≥ 5 m s^{-1}	(wind speed),
	≥ 30 degrees	(direction).
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
C6FA6	ALL	MSLP	SUR	47	0	0	1.5	-5.4	5.6
C6JS	ALL	MSLP	SUR	48	0	0	1.4	-5.0	5.2
DLDQ	ALL	MSLP	SUR	53	0	0	1.1	-4.0	4.1
ELOC8	ALL	MSLP	SUR	42	0	0	1.1	-4.0	4.1
ELQG5	ALL	MSLP	SUR	76	2	3	4.9	-5.2	7.2
ELRE5	ALL	MSLP	SUR	70	0	0	1.2	9.3	9.3
EUJV	ALL	MSLP	SUR	28	1	4	1.7	8.9	9.1
J8EL6	ALL	MSLP	SUR	42	0	0	1.1	-5.2	5.3
LAXS2	ALL	MSLP	SUR	33	0	0	1.6	6.4	6.6
OZBW6	ALL	MSLP	SUR	49	0	0	2.8	4.0	4.9
UCJJ	ALL	MSLP	SUR	25	0	0	0.9	11.2	11.2
UCTA	ALL	MSLP	SUR	40	2	5	4.4	8.3	9.4
UHLK	ALL	MSLP	SUR	21	0	0	1.3	-4.3	4.5
UICO	ALL	MSLP	SUR	38	0	0	7.3	-0.6	7.3
VRUR6	ALL	MSLP	SUR	52	0	0	1.9	5.7	6.0
V7AW8	ALL	MSLP	SUR	27	0	0	1.5	4.9	5.1
WE4805	ALL	MSLP	SUR	36	5	14	5.3	-4.5	7.0
YLBF	ALL	MSLP	SUR	25	0	0	1.1	5.7	5.8
3EIY6	ALL	MSLP	SUR	29	0	0	2.0	10.8	11.0
3FAQ3	ALL	MSLP	SUR	24	0	0	2.4	4.8	5.4
3FGN3	ALL	MSLP	SUR	26	0	0	1.4	-4.3	4.5
3FJJ3	ALL	MSLP	SUR	20	0	0	1.2	4.3	4.4
3FZW	ALL	MSLP	SUR	21	0	0	1.0	6.8	6.9
62302	ALL	MSLP	SUR	115	12	10	6.4	-3.1	7.1
9VHU	ALL	MSLP	SUR	23	0	0	1.5	5.7	5.9
9VIH	ALL	MSLP	SUR	20	0	0	1.4	-5.3	5.5
WIND SPEED									
ELAX2	ALL	SPEED	SUR	30	0	0	2.7	5.9	6.5
ELRJ6	ALL	SPEED	SUR	25	0	0	3.2	5.9	6.7
FNGH	ALL	SPEED	SUR	37	0	0	5.2	7.2	8.8
FNQI	ALL	SPEED	SUR	24	0	0	6.3	7.3	9.6
FNQM	ALL	SPEED	SUR	29	0	0	8.1	9.1	12.2
FNZQ	ALL	SPEED	SUR	29	0	0	6.5	6.2	8.9
LACQ5	ALL	SPEED	SUR	32	0	0	2.7	5.0	5.7
OXRA6	ALL	SPEED	SUR	40	0	0	3.7	5.5	6.6
PGDP	ALL	SPEED	SUR	24	0	0	6.3	6.7	9.2
PJOY	ALL	SPEED	SUR	42	0	0	5.7	7.1	9.1
SKPE	ALL	SPEED	SUR	32	0	0	3.6	5.0	6.1
3FHE4	ALL	SPEED	SUR	20	0	0	2.9	5.7	6.4
46054	ALL	SPEED	SUR	115	0	0	2.4	5.0	5.5
WIND DIRECTION									
SQBT	ALL	DIRN.	SUR	23	0	0	65.3	-47.2	80.5
VRUR6	ALL	DIRN.	SUR	41	0	0	51.6	38.4	64.3
ZSAF	ALL	DIRN.	SUR	21	0	0	21.9	37.5	43.5
45005	ALL	DIRN.	SUR	22	0	0	40.7	-33.7	52.9
45138	ALL	DIRN.	SUR	23	0	0	33.3	-53.4	62.9
52002	ALL	DIRN.	SUR	41	0	0	40.5	-31.8	51.5
52004	ALL	DIRN.	SUR	38	0	0	34.3	-46.5	57.8
52008	ALL	DIRN.	SUR	46	0	0	87.6	7.2	87.9
52312	ALL	DIRN.	SUR	22	0	0	52.0	48.4	71.1

AVAILABILITY – SHIP/SYNOP – APRIL 1997
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 19728

FIGURE 1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4 4 4 0 4 4 4 0 28 31 7 0 8 4 4 7 5 8 4 7 0
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14 18 22 15 24 40 37 48 32 8 22 8 3 3 3 16 758 439 164 122 108 120 145 148 98 127 70 86 68 36 32 19 11
10 9 9 11 13 44 43 32 60 83 48 30 29 31 41 296 402 461 472 91 66 63 89 54 73 144 178 136 78 32 13 12
7 7 9 10 12 24 41 43 75 89 88 25 20 20 27 26 32 261 170 140 159 210 98 91 57 44 16 85 180 251 258 43 12 7 6
4 5 17 8 6 5 21 42 44 56 43 21 19 11 7 6 67 4 21 9 24 74 50 183 37 64 80 92 208 241 104 28 12 6 3 4
1 1 6 4 3 2 3 14 32 56 52 117 14 7 4 18 39 76 46 20 5 11 43 25 10 72 18 77 157 44 79 8 9 2 6 1
0 1 4 3 2 2 0 0 2 14 45 31 39 8 4 8 20 65 57 46 19 38 11 5 7 42 31 66 92 68 53 9 8 13 11 8
9 2 2 2 5 2 1 1 2 13 39 39 25 84 81 3 6 9 6 26 2 68 10 6 1 12 3 1 72 99 64 43 19 13 10 11
43 11 5 17 1 1 2 1 1 0 30 54 41 142 39 4 2 4 7 14 27 36 46 16 6 1 2 6 4 5 65 114 92 10 25 33
12 2 5 9 7 1 1 4 20 51 123 109 3 2 2 2 8 41 72 43 23 15 2 0 1 1 3 94 24 72 158 152 33 5
3 1 1 1 0 0 0 0 0 26 60 87 1 1 1 1 2 4 29 60 2 2 1 1 5 1 1 1 96 41 132 319 138 14 15
0 0 0 0 0 0 0 0 2 24 2 0 0 0 1 4 0 0 4 0 1 1 5 1 2 1 0 0 93 1 1 16
0 0 0 0 0 0 12 13 7 1 3 0 0 0 0 0 0 0 1 0 1 6
1 39 4 0 0 0 4 4 3 6 4 5 0 0 4 0 0
3 4 4 8 0 4 2
1

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoys.

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 06, 12, 18 UTC

Elements monitored :Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (degrees).

Parameters monitored

:NOBS	:Number of observations received excluding duplicates.
:NGE	:Number of observations with gross errors.
:PGE	:Percentage of observations with gross errors.
:SD	:SD of difference of observations from background values excluding those with gross errors.
:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)	
	:25 m s^{-1}	(vector wind)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.¦bias¦	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

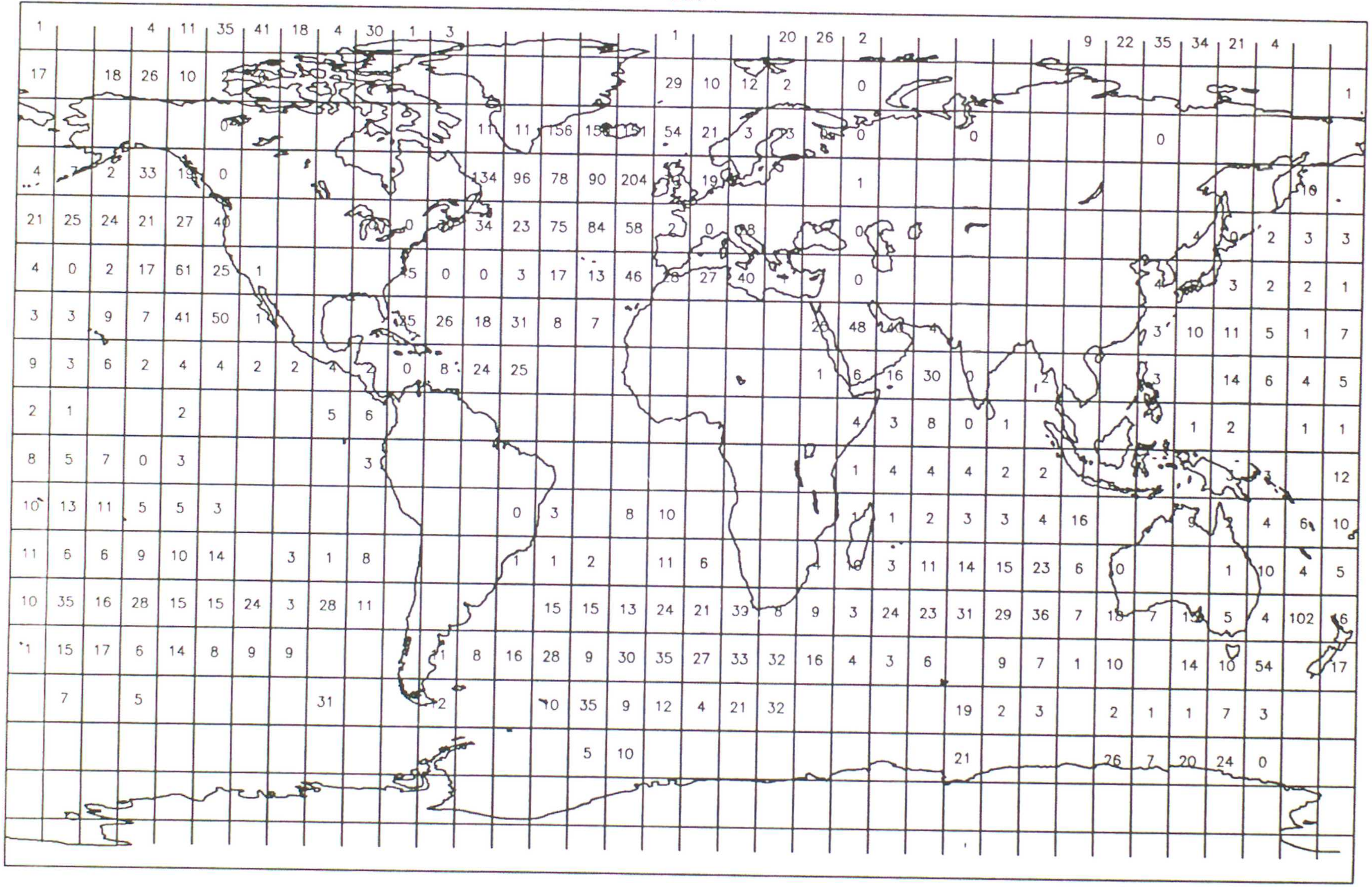
N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
14907	-34.0	75.4	ALL	MSLP	SUR	128	72	56	4.0	-1.3	4.2
25573	86.6	-3.5	ALL	MSLP	SUR	32	32	100	0.0	0.0	0.0
33567	-40.7	-15.6	ALL	MSLP	SUR	172	51	30	4.7	7.1	8.5
33951	-57.5	-33.6	ALL	MSLP	SUR	313	81	26	3.0	-0.1	3.0
33952	-42.1	-13.8	ALL	MSLP	SUR	226	7	3	3.7	4.2	5.6
44767	62.8	-8.8	ALL	MSLP	SUR	1276	169	13	7.1	-0.4	7.1
46559	28.8	-121.7	ALL	MSLP	SUR	74	0	0	3.3	7.7	8.3
54901	-42.2	-166.4	ALL	MSLP	SUR	40	2	5	3.3	-6.7	7.4
55516	-15.4	103.0	ALL	MSLP	SUR	288	0	0	1.0	-4.0	4.1
WIND SPEED											
52623	-12.8	139.1	ALL	SPEED	SUR	203	0	0	1.5	-6.5	6.7
62803	59.2	-13.8	ALL	SPEED	SUR	508	3	1	2.9	-5.4	6.1
WIND DIRECTION											
44513	51.8	-25.9	ALL	DIRN.	SUR	262	0	0	64.3	-59.6	87.7

AVAILABILITY – DRIFTER – APRIL 1997
MAIN HOURS ONLY
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 5094

FIGURE 2

3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17 18 26 10 29 10 12 2 0 1
0 11 11 156 158 151 54 21 3 23 0 0 0 0
4 7 2 33 19 0 134 96 78 90 204 19 19 1 10
21 25 24 21 27 40 0 34 23 75 84 58 2 0 68 0 4 0 2 3 3
4 0 2 17 61 25 1 5 0 0 3 17 13 46 28 27 40 0 4 3 2 2 1
3 3 9 7 41 50 1 35 26 18 31 8 7 28 48 4 3 10 11 5 1 7
9 3 6 2 4 4 2 2 4 2 0 8 24 25 1 6 16 30 0 2 3 14 6 4 5
2 1 2 5 6 4 3 8 0 1 1 2 1 1
8 5 7 0 3 3 1 4 4 4 2 2 3 12
10 13 11 5 5 3 0 3 8 10 1 1 2 3 3 4 16 9 2 4 6 10
11 6 6 9 10 14 3 1 8 1 1 2 11 6 4 10 3 11 14 15 23 6 0 1 10 4 5
10 35 16 28 15 15 24 3 28 11 15 15 13 24 21 39 8 9 3 24 23 31 29 36 7 18 7 13 5 4 102 16
1 15 17 6 14 8 9 9 1 8 16 28 9 30 35 27 33 32 16 4 3 6 9 7 1 10 14 10 54 17
7 5 31 2 10 35 9 12 4 21 32 19 2 3 2 1 1 7 3
5 10 21 26 7 20 24 0

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.¦bias¦	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	111	1	1	1	1.1	4.8	4.9
60468	35.6N	6.2E	1052	S8	102	101	99	0	0.0	-0.1	0.1
60511	35.3N	1.4E	1127	S8	110	108	98	0	8.4	5.9	10.3
60535	34.7N	3.3E	1144	S8	74	0	0	1	1.3	-6.7	6.8
60571	31.6N	2.2W	773	S8	113	0	0	0	1.1	-4.4	4.5
60670	24.6N	9.5E	1054	S8	90	3	3	11	1.4	7.4	7.5
61233	15.2N	7.3W	265	M	100	0	0	3	1.6	-4.2	4.5
62402	26.2N	32.7E	77	M	49	49	100	0	0.0	0.0	0.0
63330	13.5N	39.5E	2212	MS	34	0	0	0	0.9	-5.0	5.1
63333	11.1N	39.7E	1916	MS	53	0	0	0	0.7	7.1	7.1
63402	7.7N	36.8E	1577	MS	26	1	4	4	1.6	-10.1	10.2
63451	8.7N	39.0E	1876	MS	35	0	0	0	1.3	-4.4	4.6
63453	8.8N	39.8E	1062	S	34	0	0	0	1.5	12.2	12.3
63478	5.1N	44.6E	320	MS	43	1	2	5	1.4	7.3	7.4
68014	19.6S	18.1E	1411	S8	88	0	0	88	1.0	-5.7	5.8
68442	29.1S	26.3E	1354	S8	101	0	0	0	0.9	-5.6	5.7
68488	28.4S	31.1E	1279	S8	61	60	98	0	0.0	-1.8	1.8
68752	32.8S	27.4E	524	S8	93	0	0	1	1.4	-8.0	8.1

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
28984	52.9N	70.2E	395	S	38	4	11	18	3.6	10.1	10.7
30320	56.9N	105.7E	669	MS	48	48	100	0	0.0	0.0	0.0
30554	54.5N	113.6E	995	MS	58	1	2	9	1.2	11.0	11.1
31253	54.7N	128.9E	357	MS	118	0	0	6	2.1	-4.6	5.1
35173	51.6N	69.8E	620	MS	58	58	100	0	0.0	0.0	0.0
40701	39.3N	44.4E	1470	MS	90	0	0	0	1.3	6.9	7.0
40743	36.2N	57.7E	941	MS	116	0	0	1	1.4	-5.4	5.6
40762	35.3N	59.2E	1333	MS	114	29	25	0	0.9	-13.5	13.5
40763	35.2N	58.5E	1060	MS	41	1	2	2	1.6	-5.6	5.8
40783	32.4N	49.7E	1972	MS	83	1	1	0	1.8	-6.4	6.6
40789	33.8N	55.1E	921	MS	78	3	4	1	2.2	8.3	8.6
40798	32.3N	50.9E	1991	MS	81	0	0	0	1.4	-8.0	8.1
40818	31.2N	52.7E	2004	MS	75	0	0	5	1.4	-4.0	4.2
40836	30.8N	51.7E	1880	MS	79	2	3	1	1.4	8.2	8.3
40859	29.0N	53.7E	1383	MS	74	1	1	3	1.5	8.3	8.4
41254	23.1N	57.7E	1755	S8	58	58	100	0	0.0	0.0	0.0
44477	27.0N	87.4E	1445	S8	57	56	98	0	0.0	-10.5	10.5
47022	40.8N	128.2E	1206	S	92	0	0	60	1.2	4.5	4.7
52602	38.8N	93.4E	2734	S	120	0	0	0	1.6	-5.4	5.6
52866	36.6N	101.8E	2262	S	120	0	0	0	1.4	-4.0	4.2
56444	28.5N	98.9E	3488	S	106	106	100	0	0.0	0.0	0.0
56462	29.0N	101.5E	2994	S	113	0	0	1	2.7	7.6	8.1

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80431	9.9N	67.3W	429	MS	76	1	1	25	1.3	-4.3	4.5
82704	7.6S	72.7W	170	MS	81	0	0	0	2.0	-4.5	4.9
82975	9.1S	44.1W	331	MS	69	0	0	0	1.3	4.2	4.4
83214	10.3S	54.9W	285	MS	49	0	0	0	1.8	-6.0	6.3
83235	12.4S	46.4W	660	MS	84	0	0	1	1.2	6.7	6.8
83295	13.4S	39.9W	755	MS	54	1	2	93	0.6	-4.5	4.5
83319	14.7S	52.4W	315	MS	57	0	0	2	1.8	-4.3	4.7
83332	14.1S	46.4W	950	MS	83	20	24	0	0.7	13.8	13.8
83408	14.3S	43.8W	556	MS	81	0	0	0	1.1	10.7	10.8
83423	16.7S	49.3W	729	MS	85	0	0	0	0.7	-5.5	5.5

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83488	17.8S	42.9W	1097	MS	82	82	100	0	0.0	0.0	0.0
83531	18.6S	46.5W	896	MS	75	2	3	1	0.8	-6.6	6.6
83538	18.2S	43.6W	1297	MS	78	3	4	1	1.0	-11.3	11.3
83577	19.8S	47.9W	743	MS	32	1	3	16	1.8	-4.1	4.5
83587	19.9S	43.9W	850	MS	84	0	0	1	1.2	-8.0	8.1
83689	21.3S	43.8W	1171	MS	69	0	0	0	0.8	4.5	4.6
83704	22.3S	53.9W	369	MS	70	1	1	44	2.8	-9.0	9.4
83773	23.1S	48.9W	793	MS	45	0	0	0	1.2	-5.5	5.6
83836	25.5S	50.6W	837	MS	86	0	0	1	1.5	-4.4	4.6
83916	28.2S	51.5W	806	MS	85	0	0	1	1.2	-4.6	4.8
84401	5.2S	80.6W	55	MS	86	0	0	16	1.6	4.4	4.7
84455	6.5S	76.4W	282	MS	58	0	0	2	2.1	6.7	7.0
84472	7.1S	78.5W	2622	S	48	2	4	6	2.5	-5.7	6.2
84501	8.1S	79.0W	30	MS	93	0	0	3	1.6	4.4	4.7
84542	9.4S	77.6W	2760	S	39	1	3	8	2.7	4.1	4.9
84686	13.6S	72.0W	3249	S	103	0	0	1	1.7	-5.5	5.8
84782	18.1S	70.3W	469	MS	85	0	0	0	1.7	8.3	8.5
85312	19.8S	63.9W	992	S	37	2	5	51	1.2	-4.6	4.8
85406	18.3S	70.3W	58	M	117	0	0	7	1.4	6.8	6.9
85418	20.5S	70.2W	48	M	116	0	C	0	1.6	4.1	4.4
85442	23.4S	70.4W	135	M	116	0	0	0	1.3	4.5	4.7

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71094	66.7N	61.4W	722	MS	118	0	0	20	1.5	-4.7	4.9
76118	30.4N	109.7W	1040	MS	29	0	0	0	1.2	-12.0	12.1
76160	29.1N	111.0W	211	MS	27	0	0	0	1.0	-4.0	4.1
76539	22.1N	101.0W	1870	MS	79	0	0	3	2.0	-4.3	4.7
76625	20.6N	100.4W	1813	MS	64	0	0	2	1.5	-8.0	8.1
76632	20.1N	98.7W	2417	MS	29	0	0	93	1.2	-4.7	4.9
76634	20.1N	98.4W	2135	MS	77	1	1	86	1.4	-5.0	5.2
76658	19.2N	103.7W	494	MS	24	0	0	0	1.9	5.8	6.1
76698	19.6N	88.0W	20	MS	66	0	0	3	2.4	-4.8	5.4
76750	18.5N	88.3W	9	MS	80	0	0	0	1.5	-4.2	4.5
76762	17.5N	99.5W	1865	MS	56	56	100	0	0.0	0.0	0.0
76775	17.1N	96.7W	1550	MS	46	0	0	0	1.9	4.1	4.5

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
91339	5.5N	153.8E	3	MS	27	1	4	0	2.1	-5.6	6.0
94955	41.6S	145.7E	684	MS	182	182	100	2	0.0	0.0	0.0
97700	3.3S	127.1E	20	M	88	0	0	73	1.6	-4.9	5.2

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
02045	67.8N	20.4E	408	M	56	56	100	0	0.0	0.0	0.0
11024	48.4N	15.4E	860	S8	118	5	4	0	0.9	-12.8	12.8
16020	46.5N	11.3E	1461	MS	112	112	100	0	0.0	0.0	0.0
16227	41.9N	13.6E	655	MS	120	108	90	0	2.1	-12.6	12.8
16453	37.1N	14.2E	33	MS	87	0	0	46	1.7	-4.2	4.5
16549	39.1N	8.3E	12	MS	120	0	0	0	1.2	-4.5	4.7
16614	40.4N	21.3E	604	MS	106	0	0	4	1.2	-7.8	7.9

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89108	89.0S	0.3W	2754	S	86	11	13	16	4.0	4.1	5.7
89264	71.4S	68.9W	780	S	74	0	0	0	1.9	4.2	4.6
89324	80.0S	120.0W	1530	S	84	8	10	24	3.7	-6.0	7.0
89744	74.0S	43.0E	3353	S	80	0	0	0	2.0	6.1	6.4
89774	73.4S	76.8E	2565	S	93	0	0	0	3.1	4.1	5.1
89860	74.2S	160.3E	1772	S	78	2	3	5	2.7	-6.6	7.1

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :70.0 - 500.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

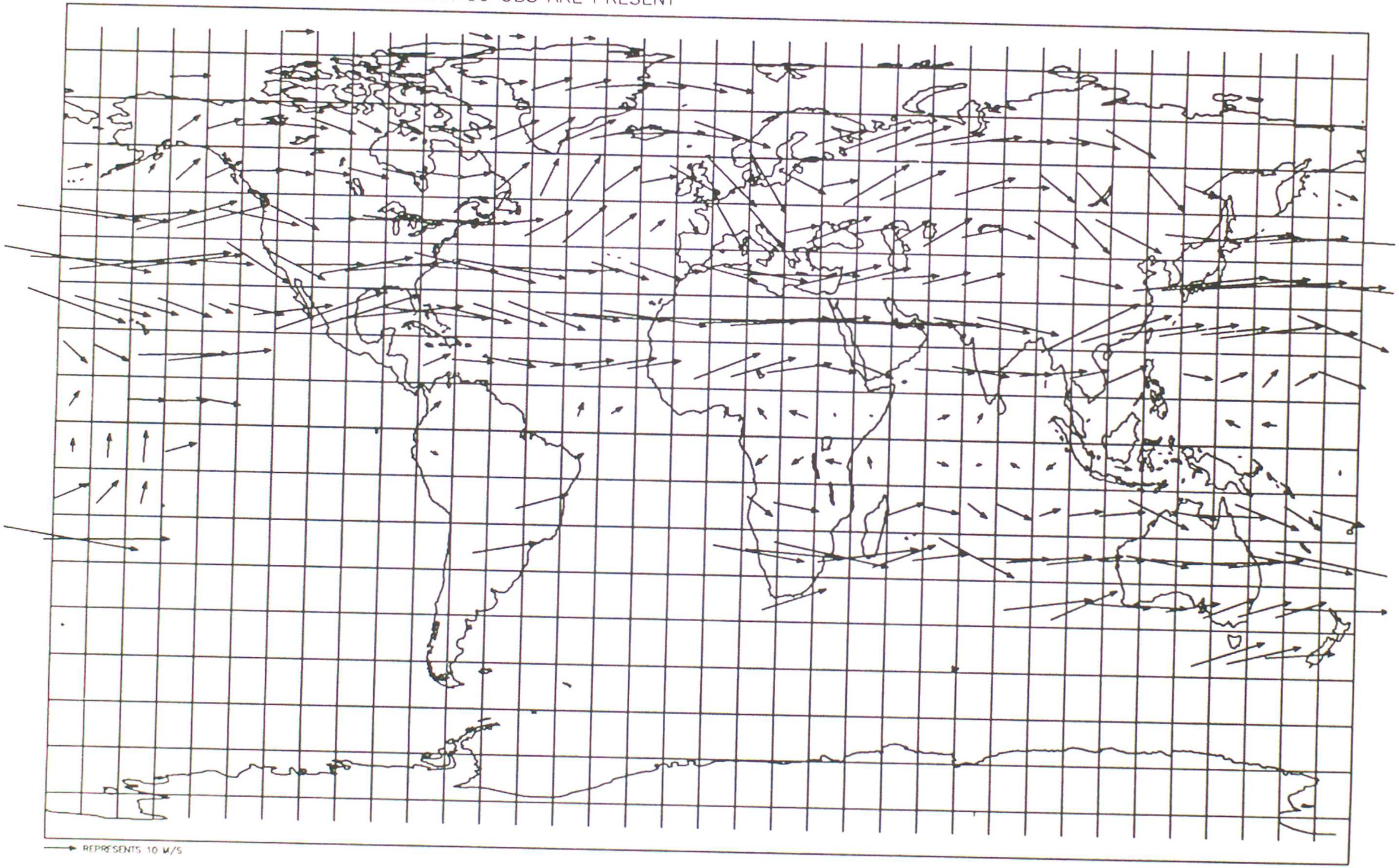
		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	97	1	3	1.8	0.2	96	0	1	0	6.1	1.9
AAL	5108	0	1	1.9	0.2	5120	0	2	0	7.7	0.8
AAR	2046	0	1	1.9	-0.1	2055	0	1	0	8.2	0.7
ACA	1963	1	1	1.9	0.1	2010	0	2	1	6.4	0.4
ACI	42	2	5	1.9	0.5	42	0	2	0	6.6	0.3
AEA	710	1	24	2.8	1.0	680	1	3	0	9.0	1.3
AEL	744	0	2	1.8	-0.4	747	0	4	0	9.7	0.5
AEY	192	1	3	1.8	0.8	192	0	4	0	8.7	0.2
AFL	132	1	2	2.4	0.9	137	0	3	1	8.1	2.3
AFR	1683	1	5	1.7	0.2	1723	0	5	0	7.6	0.9
AIH	139	0	5	1.8	0.0	139	0	8	0	8.7	1.3
AJM	65	2	3	1.5	-0.2	66	2	5	0	9.1	-0.8
AMT	350	0	3	2.0	0.9	352	0	28	0	7.7	0.2
AMX	294	1	4	2.1	-0.3	292	0	5	0	10.1	0.6
ANA	1182	0	1	2.0	-0.3	1184	0	2	0	8.4	0.7
ANZ	2495	2	4	1.9	0.0	2459	0	3	0	7.9	1.4
AOM	679	1	3	2.0	1.2	684	0	3	0	8.6	1.0
ARP	86	1	2	1.9	1.0	81	0	2	0	7.6	2.4
ATN	50	4	12	2.7	-1.0	47	0	94	0	20.4	7.2
AUA	60	0	2	1.9	-0.6	63	0	5	0	7.3	2.2
AVA	324	3	6	2.1	0.3	325	0	4	0	8.9	1.3
AVN	49	2	2	1.6	0.6	48	0	0	0	6.3	0.1
AXA	83	4	5	2.3	1.1	80	0	3	0	10.2	0.2
AZA	589	1	3	2.1	0.3	599	0	4	1	7.4	1.3
BAL	522	0	15	2.1	-0.3	526	0	16	0	8.3	0.8
BAW	1488	0	10	1.9	0.1	1521	0	12	1	7.5	0.7
BBB	77	0	0	1.5	-0.1	77	0	1	0	7.5	0.0
BWA	319	1	4	2.7	2.0	318	0	4	0	9.0	0.7
CAL	1789	1	1	1.9	-0.1	1798	0	2	0	8.4	0.7
CCA	161	2	92	2.6	0.5	187	1	91	0	11.5	-0.7
CDN	1918	0	1	1.8	0.5	1931	0	1	0	7.6	0.3
CES	320	0	2	1.9	0.3	329	1	5	0	10.9	-0.2
CFG	1270	0	2	2.1	-0.9	1268	0	2	0	8.6	0.6
CKS	215	0	30	1.8	0.3	217	0	31	0	7.4	0.3
CKT	140	0	6	1.8	0.5	128	0	8	0	9.4	0.5
CLX	296	0	0	1.7	-0.5	300	0	2	0	6.1	1.0
CMI	947	1	2	1.8	0.7	953	0	2	0	8.3	0.9
CMM	342	1	1	1.6	0.2	339	0	0	0	7.9	0.4
COA	911	1	3	1.8	0.6	916	0	3	0	7.4	0.5
CPA	59	0	3	1.7	-0.3	59	0	3	0	7.2	-0.3
CRL	915	1	2	1.8	0.2	927	0	2	0	8.1	0.9
CSA	23	0	4	2.7	0.7	23	0	4	0	7.4	1.8
CTB	196	1	4	2.1	0.1	199	0	4	1	8.1	1.3
CTM	72	0	10	2.1	0.0	72	0	10	0	7.5	1.0
CUB	512	1	6	2.3	1.0	510	0	100	0	10.7	1.2
DAF	30	0	0	1.4	-0.2	31	3	3	0	7.0	0.9
DAL	6028	0	2	2.2	0.7	5577	0	2	0	7.4	0.5
DHL	173	5	100	3.8	-1.7	170	0	100	1	9.5	0.3
DLH	3471	0	5	1.9	0.2	3501	0	9	4	7.0	0.7
DOA	79	1	3	1.6	-0.5	80	0	3	0	8.6	-0.8
EIA	133	0	4	1.5	0.0	137	0	6	0	8.6	1.9
ELY	167	0	7	1.8	-0.2	177	0	9	1	7.6	1.1
EVA	484	1	1	2.0	-0.6	512	0	2	0	7.4	0.8
EWW	170	8	18	3.0	1.1	172	1	99	0	14.8	4.1
FDX	1007	0	1	1.7	0.5	1017	0	2	0	8.0	0.8
FIN	347	0	2	1.8	0.4	345	0	2	1	6.5	0.8
FJI	492	7	7	1.6	0.7	463	0	1	0	7.3	0.8
FNY	24	0	0	2.0	0.6	23	0	4	0	11.7	4.3
FOM	173	8	8	1.7	0.2	172	0	100	0	9.7	1.3

IDENT.	N.REP.	TEMPERATURE PG	PR	RMS	BIAS	WIND N.REP.	PG	PR	PC	RMS	BIAS
GAF	106	1	2	2.4	0.3	109	0	3	0	7.2	-0.3
GCO	38	0	3	1.9	0.9	40	0	3	0	12.2	1.0
GIA	190	1	2	1.8	0.5	192	0	1	0	6.8	1.7
HAL	1857	0	1	1.6	0.3	1865	0	2	0	9.1	0.5
HLF	252	1	2	1.9	-0.7	238	0	22	0	8.7	0.6
HRH	45	16	20	1.7	1.1	39	0	5	0	6.5	0.6
IBE	2712	2	20	2.2	0.5	2715	0	20	0	9.5	0.8
ICE	717	0	1	1.7	0.1	714	0	2	0	7.0	0.5
JAL	6456	0	1	1.9	0.1	6490	0	2	0	8.1	0.7
JAZ	44	0	0	1.6	0.7	44	0	2	0	6.7	0.6
KAL	3401	0	1	2.0	-0.3	3416	0	2	0	8.6	0.7
KLM	3040	0	3	2.2	0.5	3060	0	3	0	7.5	0.7
LDA	284	0	5	1.9	-0.9	285	0	7	0	8.9	0.1
LDI	442	0	14	2.0	-0.9	443	0	16	0	9.4	0.8
LIB	362	1	2	2.1	0.9	363	0	2	0	9.6	0.3
LKR	40	0	3	1.9	0.9	40	0	5	0	6.5	2.1
LOT	319	0	1	1.8	-0.9	315	0	1	1	6.0	0.1
LTU	1132	1	3	1.9	0.1	1097	0	3	0	8.9	0.8
MAS	284	0	2	2.3	-0.4	307	0	5	0	9.6	0.8
MDA	183	0	0	1.9	0.4	183	0	2	0	8.1	-0.3
MON	36	3	8	1.2	0.3	31	0	10	0	11.1	1.6
MPH	863	0	3	2.0	-0.5	874	0	2	0	7.6	0.4
NCA	657	0	1	1.9	0.6	657	0	2	0	8.5	0.4
NWA	10372	1	2	2.0	0.5	10432	0	2	0	8.0	0.6
PAC	132	1	2	1.9	0.3	142	0	3	0	8.7	0.4
PAI	29	0	3	2.1	1.1	29	0	0	0	7.2	1.6
PAL	1136	0	1	1.8	0.0	1136	0	2	0	9.0	0.7
PAO	198	0	3	1.5	-0.1	197	0	3	0	8.3	0.7
PIA	36	3	6	2.3	0.5	38	0	5	0	8.3	2.6
QFA	1383	1	2	1.7	0.3	1376	0	2	0	7.6	1.3
RAF	142	0	1	1.8	0.5	141	0	3	0	8.9	0.0
RAM	39	3	3	2.6	-0.4	39	0	3	0	9.6	0.0
RCH	436	7	95	2.8	0.8	453	0	95	0	10.3	1.6
RJA	81	0	1	1.6	0.5	83	0	2	0	8.1	-0.1
RKA	111	2	4	1.7	-0.3	113	1	7	0	11.3	1.5
RRR	52	0	6	2.3	0.9	51	0	8	2	6.4	-0.2
SAA	278	1	4	2.0	-0.4	279	0	6	0	10.7	0.4
SAB	37	0	5	1.5	0.8	39	0	8	0	7.8	1.7
SAS	1090	0	1	1.8	0.1	1083	0	2	1	6.9	0.3
SCX	47	0	4	1.6	0.7	48	0	4	0	6.6	0.5
SIA	1214	0	2	2.1	-0.5	1225	0	3	0	9.0	0.3
SJM	62	2	3	1.2	0.3	62	2	5	0	6.7	1.9
SLR	110	2	21	2.1	-0.6	111	0	20	0	9.5	1.3
SOL	55	2	2	1.2	0.7	54	0	2	2	6.5	1.0
SPP	433	1	7	1.9	-0.1	403	0	7	0	9.3	1.5
SVA	102	0	8	2.2	0.1	110	0	100	0	11.8	3.3
SWR	177	0	6	1.9	0.4	179	0	8	0	8.6	0.8
TAP	604	0	3	1.9	-0.3	609	0	5	0	10.4	1.1
TEJ	46	0	15	1.7	0.7	49	0	20	0	11.2	2.4
THA	245	0	2	2.2	-0.5	252	0	3	0	10.3	0.3
TOW	48	0	0	1.6	-0.4	50	0	0	0	8.3	1.8
TPA	24	4	8	1.4	0.7	23	0	4	0	7.4	0.4
TSC	42	0	5	2.5	0.4	43	0	0	0	6.5	2.1
TWA	1372	0	1	2.1	0.0	1371	0	2	0	7.8	1.0
TWE	26	0	4	1.8	0.7	27	0	7	0	13.2	-4.4
UAL	11855	0	2	1.9	-0.1	11936	0	1	0	7.7	0.6
ULE	314	0	1	1.8	0.5	309	0	4	0	9.5	0.3
UPS	532	1	6	1.9	0.2	534	0	4	0	7.2	0.5
USA	346	1	1	2.0	-0.2	348	0	3	0	8.5	1.2

		TEMPERATURE					WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
VIR	214	0	1	1.8	-0.5	216	0	1	0	6.8	1.1
VRG	80	1	3	1.9	1.1	82	1	2	0	6.7	2.1
VSP	175	2	4	2.3	0.4	179	1	2	1	10.2	0.3
VVR	34	38	62	5.5	3.2	35	0	6	0	12.8	2.5
AF	44	0	7	2.2	-1.2	43	0	5	0	9.1	1.8
AN	23492	0	3	1.1	0.1	23343	0	3	0	5.7	0.8
BA	18134	0	6	1.3	0.4	18085	0	6	0	6.6	1.3
DL	97132	0	3	1.7	0.2	97132	0	6	0	7.2	1.7
FJ	51	2	14	2.0	0.8	51	0	10	0	6.3	0.2
IT	625	0	1	0.8	0.0	625	0	1	0	5.3	0.3
KL	11282	0	7	1.3	0.5	11278	0	6	0	6.6	1.0
LH	3432	0	1	1.5	0.3	3413	0	2	0	7.2	1.3
MK	6164	0	0	1.0	0.6	6121	0	1	0	7.2	1.9
NW	37447	0	2	1.6	0.3	37448	0	1	0	6.5	1.4
QF	5191	0	1	1.1	0.2	5191	0	1	0	6.0	1.0
SA	4076	2	2	1.3	0.8	4075	0	1	0	7.2	1.7
SV	1481	0	1	1.3	0.7	1475	0	1	0	7.2	1.9
N	477	3	99	2.8	1.2	506	0	4	1	9.5	1.2

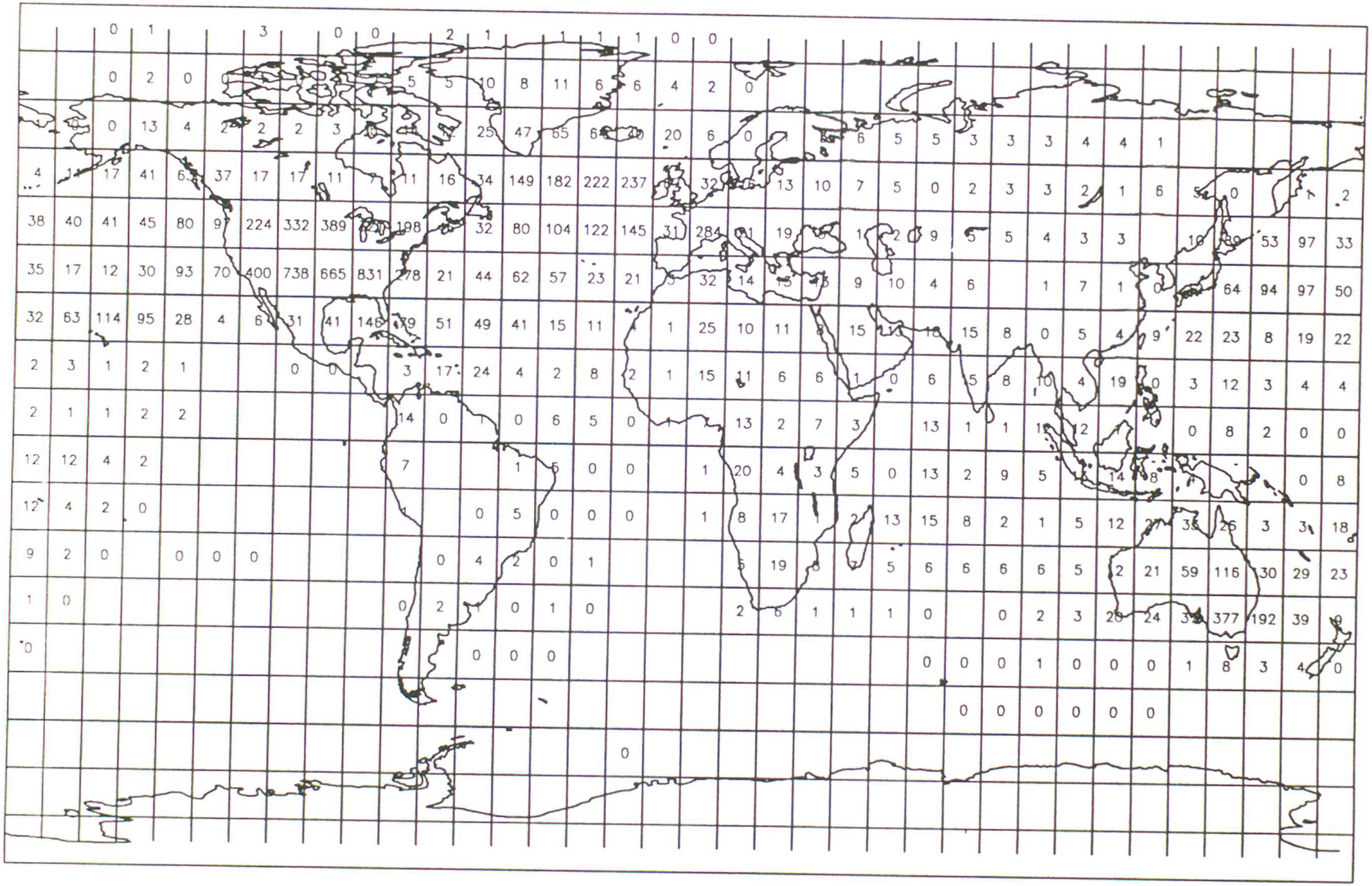
AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA
APRIL 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 4



MEAN DAILY COUNT OF AIRCRAFT 70 - 500 HPA
APRIL 1997
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

FIGURE 3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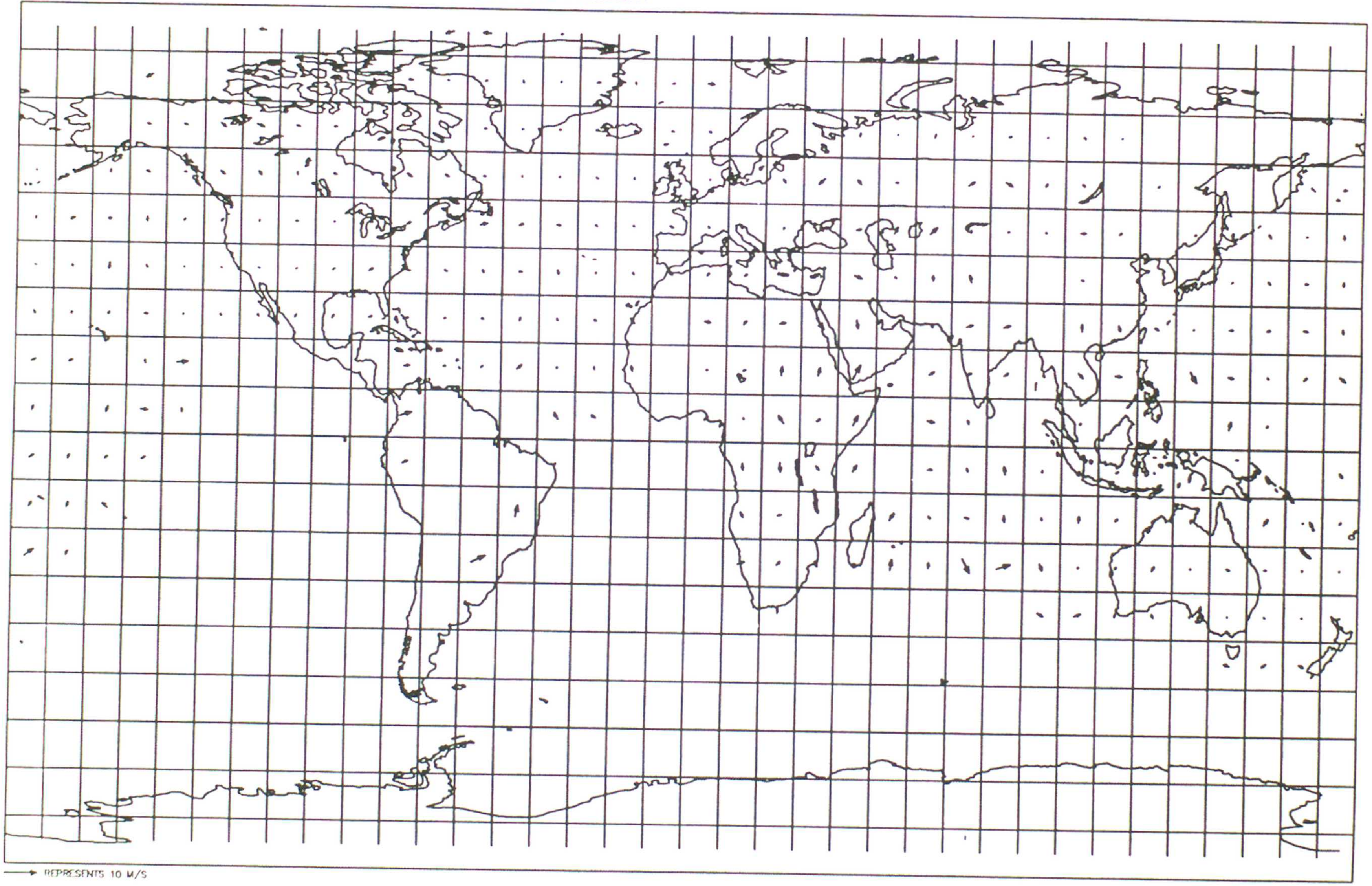
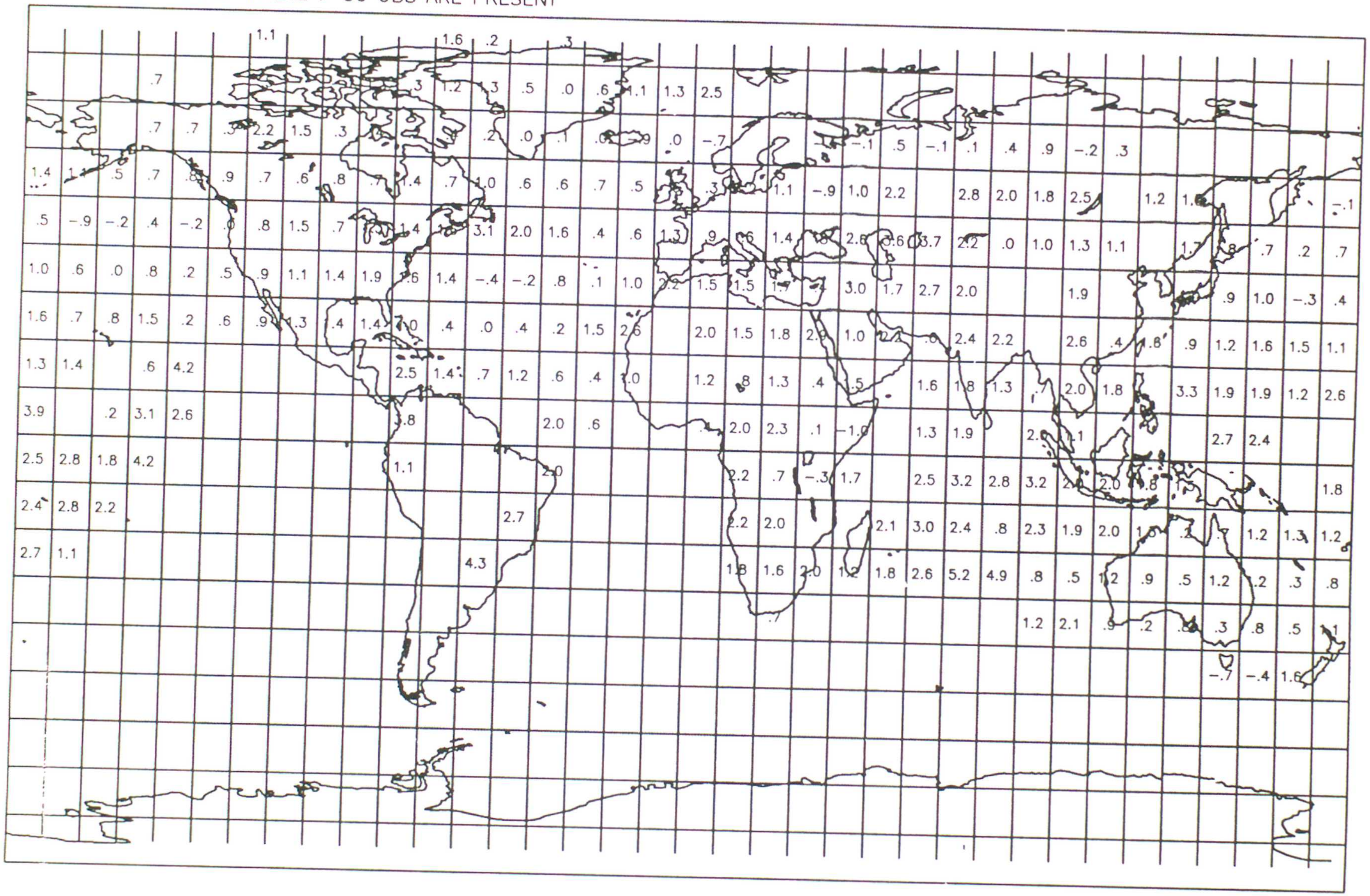
0 13 4 2 2 2 3 25 47 65 64 20 6 0 6 5 5 3 3 3 4 4 1
4 17 41 63 37 17 17 11 7 11 16 34 149 182 222 237 32 13 10 7 5 0 2 3 3 2 1 6 5 0 2
38 40 41 45 80 97 224 332 389 198 32 80 104 122 145 31 284 31 19 1 2 9 5 5 4 3 3 10 39 53 97 33
35 17 12 30 93 70 400 738 665 831 278 21 44 62 57 23 21 32 14 13 9 10 4 6 1 7 1 0 64 94 97 50
32 63 114 95 28 4 6 31 41 146 79 51 49 41 15 11 1 25 10 11 8 15 13 18 15 8 0 5 4 9 22 23 8 19 22
2 3 1 2 1 0 0 3 17 24 4 2 8 2 1 15 11 6 6 1 0 6 5 8 10 4 19 0 3 12 3 4 4
2 1 1 2 2 14 0 1 0 6 5 0 1 13 2 7 3 13 1 1 10 12 0 8 2 0 0
12 12 4 2 7 1 5 0 0 1 20 4 3 5 0 13 2 9 5 14 8 0 8
12 4 2 0 0 5 0 0 0 1 8 17 1 2 13 15 8 2 1 5 12 27 35 26 3 31 18
9 2 0 0 0 0 0 4 2 0 1 5 19 8 7 5 6 6 6 6 5 2 21 59 116 30 29 23
1 0 0 2 1 0 1 0 2 5 1 1 1 0 0 2 3 20 24 35 377 192 39 9
0 0 0 0 0 0 0 1 0 0 0 1 8 3 4 0
0 0 0 0 0 0
0

AIRCRAFT MEAN O-B WINDS BETWEEN 70 AND 500 HPA
APRIL 1997
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 5



AIRCRAFT : MEAN O-B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
APRIL 1997
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


1.1 1.6 .2 .3
.7 .3 1.2 1.3 .5 .0 .6 1.1 1.3 2.5
.7 .7 .3 2.2 1.5 .3 .2 .0 .1 .6 .9 .0 −.7 −.1 .5 −.1 .1 .4 .9 −.2 .3
1.4 1.1 .5 .7 .8 .9 .7 .6 .8 .7 1.4 .7 1.0 .6 .6 .7 .5 .3 1.1 −.9 1.0 2.2 2.8 2.0 1.8 2.5 1.2 1.6 −.1
.5 −.9 −.2 .4 −.2 .0 .8 1.5 .7 1.4 3.1 2.0 1.6 .4 .6 1.3 .9 .6 1.4 .8 2.6 3.6 3.7 2.2 .0 1.0 1.3 1.1 1.7 .8 .7 .2 .7
1.0 .6 .0 .8 .2 .5 .9 1.1 1.4 1.9 .6 1.4 −.4 −.2 .8 .1 1.0 2.2 1.5 1.5 1.7 .4 3.0 1.7 2.7 2.0 1.9 .9 1.0 −.3 .4
1.6 .7 .8 1.5 .2 .6 .9 1.3 .4 1.4 1.0 .4 .0 .4 .2 1.5 2.6 2.0 1.5 1.8 2.9 1.0 2.2 .6 2.4 2.2 2.6 .4 1.8 .9 1.2 1.6 1.5 1.1
1.3 1.4 .6 4.2 2.5 1.4 .7 1.2 .6 .4 1.0 1.2 .8 1.3 .4 .5 1.6 1.8 1.3 .7 2.0 1.8 3.3 1.9 1.9 1.2 2.6
3.9 .2 3.1 2.6 3.8 2.0 .6 2.0 2.3 .1 −1.0 1.3 1.9 2.6 .1 2.7 2.4
2.5 2.8 1.8 4.2 1.1 2.0 2.2 .7 −.3 1.7 2.5 3.2 2.8 3.2 2.0 2.0 .8 1.8
2.4 2.8 2.2 2.7 2.2 2.0 2.1 3.0 2.4 .8 2.3 1.9 2.0 1.5 1.2 1.3 1.2
2.7 1.1 4.3 1.8 1.6 2.0 1.2 1.8 2.6 5.2 4.9 .8 .5 1.2 .9 .5 1.2 .2 .3 .8
.7 1.2 2.1 .9 .2 .3 .8 .5 .1
−.7 −.4 1.6

AIRCRAFT : RMS O–B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
APRIL 1997
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

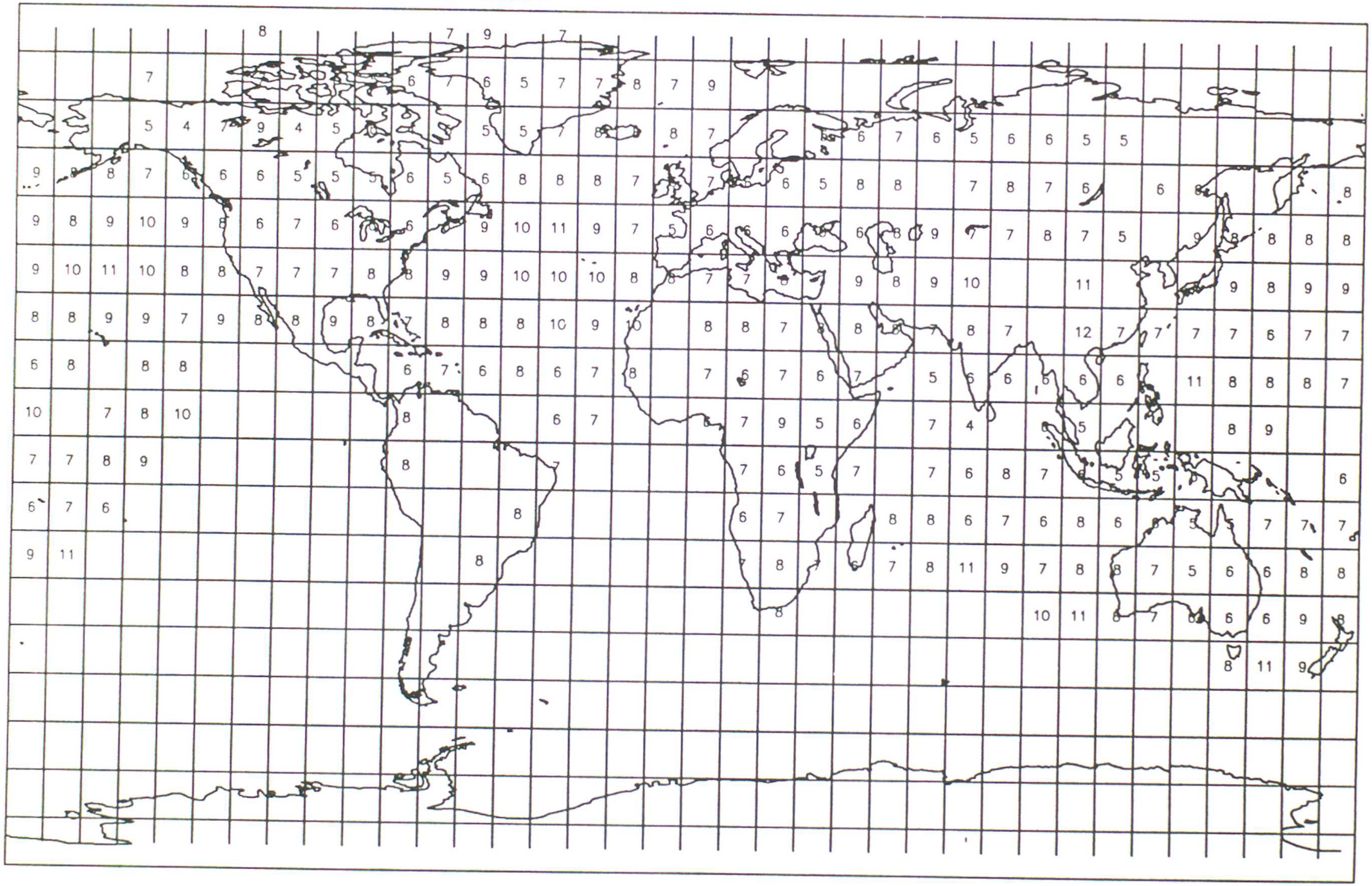


TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

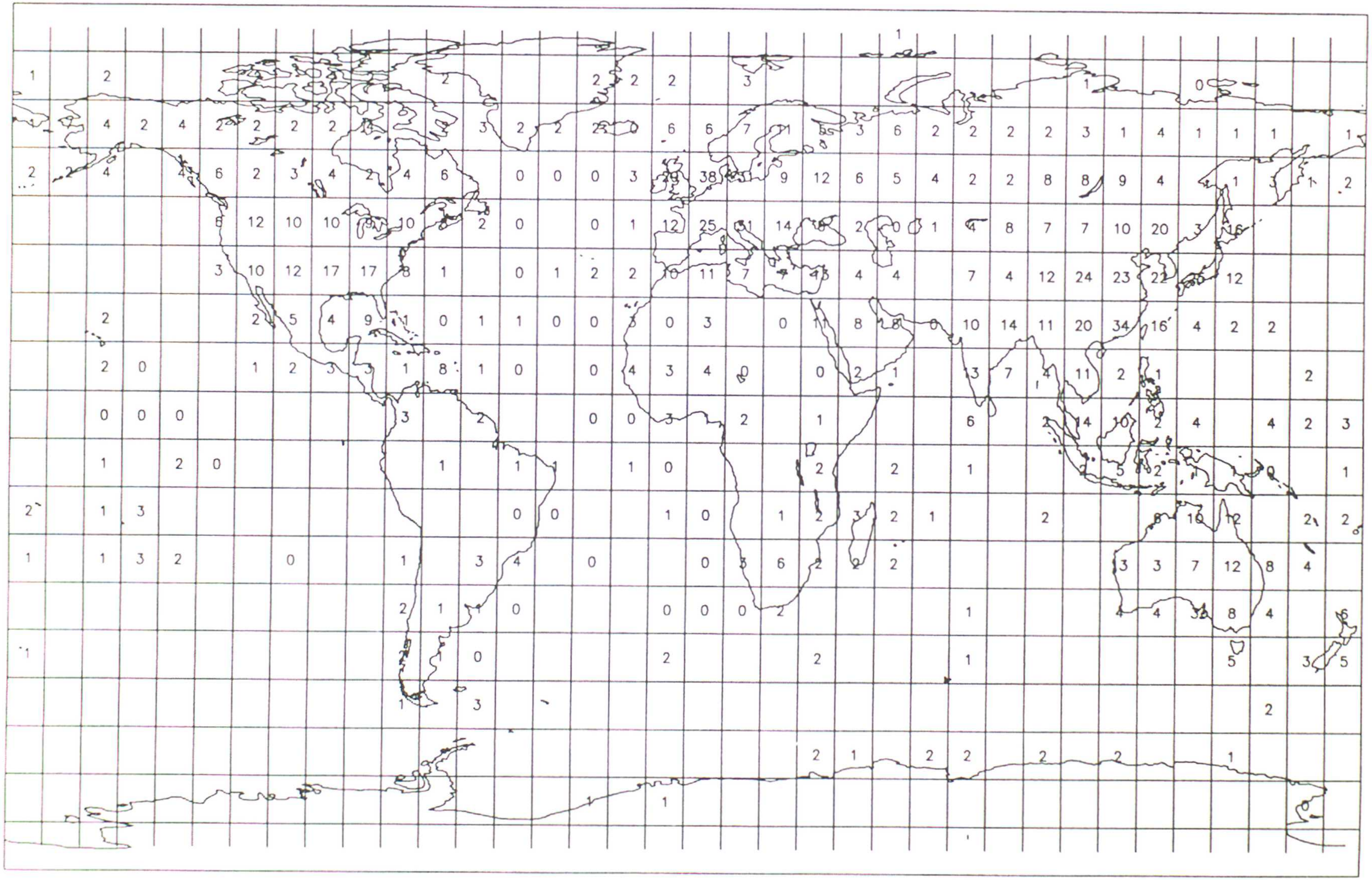
WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
13275	00	Z	50	45/ 20	22	2	131.9	87.4	158.2	4
22217	12	Z	30	67/ 32	18	0	99.0	136.3	168.4	5
23933	00	Z	30	61/ 69	19	0	88.2	158.7	181.6	6
25563	00	Z	100	65/ 178	10	0	37.4	188.3	192.0	6
37985	00	Z	200	39/ 49	16	0	93.5	63.1	112.8	7
42027	00	Z	150	34/ 75	16	2	95.2	-38.9	102.8	8
42027	12	Z	70	34/ 75	10	1	121.8	138.3	184.3	5
42339	12	Z	200	26/ 73	12	0	67.0	83.0	106.7	5
42361	12	Z	50	26/ 78	13	0	135.7	83.5	159.3	4
42369	00	Z	30	27/ 81	15	2	173.5	189.3	256.8	7
42369	12	Z	70	27/ 81	11	3	202.2	96.9	224.2	10
42379	00	Z	70	27/ 83	21	1	175.1	135.9	221.6	11
42379	12	Z	70	27/ 83	21	1	131.9	174.2	218.5	10
42647	00	Z	250	23/ 73	19	1	46.2	-65.0	79.7	6
42647	12	Z	50	23/ 73	10	0	76.5	159.2	176.6	5
42667	00	Z	150	23/ 77	23	0	75.1	-81.9	111.1	6
42667	12	Z	70	23/ 77	15	2	90.7	98.3	133.8	5
42701	00	Z	200	23/ 85	18	0	66.9	-85.4	108.5	9
42724	12	Z	200	24/ 91	18	0	66.4	-39.4	77.2	4
42809	00	Z	50	23/ 88	19	0	120.5	-113.2	165.3	5
42809	12	Z	50	23/ 88	15	0	132.0	-17.8	133.1	5
42867	00	Z	250	21/ 79	23	0	61.3	-55.1	82.4	8
42874	00	Z	150	21/ 82	12	0	76.9	-42.9	88.1	4
43014	00	Z	200	20/ 75	19	2	90.8	-84.4	124.0	6
43041	00	Z	150	19/ 82	15	0	116.6	-34.9	121.7	7
43128	00	Z	200	17/ 78	20	0	90.6	-68.3	113.5	9
43128	12	Z	200	17/ 78	21	0	106.8	-13.0	107.6	7
43150	00	Z	850	18/ 83	27	0	7.5	-33.2	34.0	4
43185	00	Z	50	16/ 81	18	0	166.2	5.2	166.3	4
43185	12	Z	50	16/ 81	14	0	124.1	114.3	168.7	6
43192	12	Z	100	15/ 74	12	1	111.7	97.7	148.3	4
43279	12	Z	30	13/ 80	11	0	89.7	187.9	208.2	4
43285	00	Z	150	13/ 75	17	1	69.3	-74.1	101.4	7
43295	12	Z	70	13/ 78	13	1	81.9	194.5	211.0	9
43346	12	Z	30	11/ 80	15	0	139.7	166.1	217.0	6
43369	00	Z	50	8/ 73	17	0	139.1	-167.4	217.7	11
43371	00	Z	50	8/ 77	19	2	58.0	-268.6	274.8	10
44212	12	Z	200	50/ 92	24	0	58.1	69.8	90.8	4
50527	12	Z	30	49/ 120	26	0	84.0	223.0	238.3	4
54135	00	Z	50	44/ 122	28	0	103.4	104.4	147.0	6
54497	12	Z	30	40/ 124	12	0	98.4	188.9	213.0	4
58633	00	Z	100	29/ 119	29	0	35.1	103.9	109.7	4
60360	12	Z	300	37/ 8	5	8	56.7	-153.4	163.5	7
60490	12	Z	100	36/ -1	2	11	3.5	-272.5	272.5	9
62414	00	Z	30	24/ 33	11	2	119.6	227.6	257.2	5
62414	12	Z	30	24/ 33	9	5	115.6	247.4	273.1	7
89022	12	Z	70	-75/ -27	4	14	182.7	-123.0	220.3	10
89542	00	Z	300	-68/ 46	25	0	33.7	74.8	82.0	5
91557	12	Z	700	-18/ 168	25	2	13.8	-80.3	81.5	8
96237	00	Z	250	-2/ 106	11	0	76.6	-88.0	116.6	8
97014	12	Z	100	2/ 125	26	0	132.5	-10.5	132.9	4

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – APRIL 1997 FIGURE 8

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1369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2 4 4 6 2 3 4 2 4 6 0 0 0 3 29 38 9 12 6 5 4 2 2 8 8 9 4 1 3 2
8 12 10 10 9 10 2 0 0 1 12 25 31 14 10 2 0 0 1 4 8 7 7 10 20 3 16
3 10 12 17 17 8 1 0 1 2 2 10 11 7 4 43 4 4 7 4 12 24 23 22 20 12
2 2 5 4 9 1 0 1 1 0 0 3 0 3 0 11 8 8 0 10 14 11 20 34 16 4 2 2
2 0 1 2 3 3 1 8 1 0 0 4 3 4 0 0 2 1 13 7 4 11 2 1 2
0 0 0 3 2 0 0 3 2 1 6 2 14 10 2 4 4 2 3
1 2 0 1 1 1 1 0 2 2 1 5 2 0 1
2 1 3 0 0 1 0 1 2 3 2 1 2 8 16 12 2 2
1 1 3 2 0 1 3 4 0 0 3 6 2 2 2 3 3 7 12 8 4
2 1 1 0 0 0 0 2 1 4 4 32 8 4 6
1 1 0 2 2 1 5 3 5
1 3 2
2 1 2 2 2 2 1
1 1

13

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 100.0 hPa
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.2	
SELECTION CRITERIA	: ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.	

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
41977	00	V	200	22/ 92	24	0	20	-5.2	-0.7	19.9	5
42369	00	V	100	27/ 81	20	0	25	8.4	-12.0	18.8	1
42369	12	V	100	27/ 81	13	0	15	7.9	-8.9	15.8	1
43014	12	V	150	20/ 75	12	0	8	12.7	6.7	16.6	1
54497	12	V	250	40/ 124	22	0	9	8.4	0.5	15.1	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – APRIL 1997

FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1231

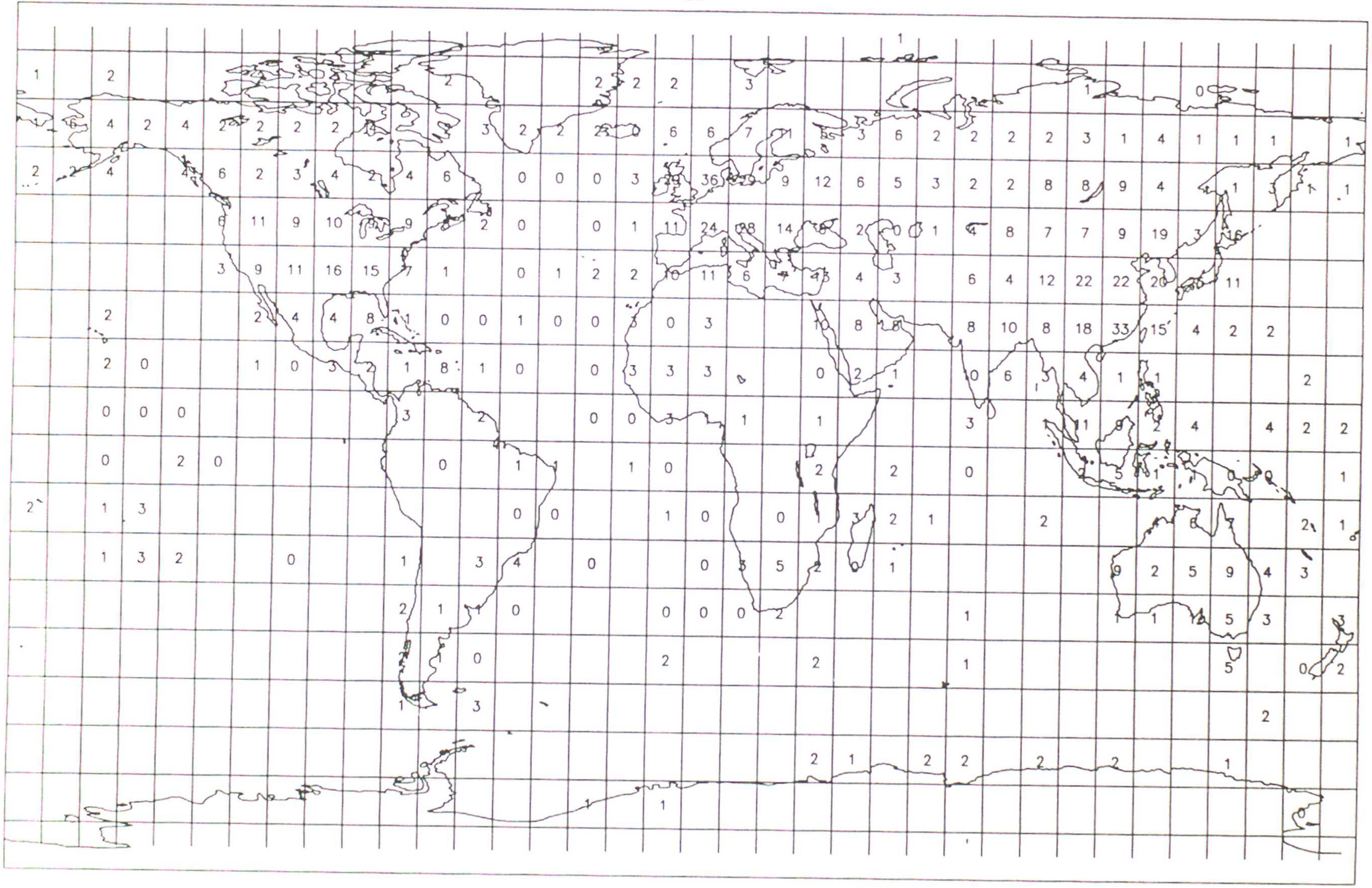


TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for radiosonde TEMPs.
Area monitored	:90°N - 90°S, 180°W - 180°E.
Standard of comparison	:Background field from Bracknell global model.
Observation times	:00 UTC and 12 UTC.
Level(s) monitored	:Standard levels between 500.0 - 150.0 hPa
Element monitored	:WIND DIRECTION in degrees

Parameters monitored

:NUM OBS	:Average number of observations at all levels.
:BIAS	:Mean difference of observations from background values from all levels.
:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
:SD	:SD of difference of observations from background values at all levels.

SELECTION CRITERIA

:NUM OBS ≥ 5, and
ABSOLUTE BIAS $\geq 10°$, with
SD $< 30°$, and
MAX SPREAD $< 10°$

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
10771	00	DD	49/ 12	19	-11.2	2.1	22.6
16144	12	DD	45/ 12	27	30.9	3.3	22.0
17240	00	DD	38/ 31	29	-19.5	3.0	16.0
17240	12	DD	38/ 31	29	-14.4	2.6	16.0
42339	00	DD	26/ 73	16	18.3	2.4	12.2
42339	12	DD	26/ 73	15	16.6	9.4	15.9
42369	00	DD	27/ 81	21	17.0	3.9	11.9
42369	12	DD	27/ 81	15	19.0	4.9	15.3
48568	00	DD	7/ 101	13	17.5	8.0	26.8
60571	00	DD	32/ -2	19	12.1	7.5	13.1
60571	12	DD	32/ -2	17	10.8	7.0	17.0
62337	00	DD	31/ 34	26	10.7	2.9	8.0
62337	12	DD	31/ 34	26	10.0	2.3	7.1
65578	12	DD	5/ -4	10	-12.5	7.8	29.0
71043	00	DD	65/-127	26	10.6	6.0	14.6
72476	00	DD	39/-109	27	-15.6	3.4	11.1
72476	12	DD	39/-109	26	-13.8	4.3	11.5
76612	12	DD	21/-103	8	13.6	4.7	11.4
78073	12	DD	25/ -77	22	-10.8	5.5	22.7
78397	12	DD	18/ -77	9	-11.1	8.2	26.2
83780	12	DD	-24/ -47	24	-12.4	8.4	20.1
91413	00	DD	9/ 138	17	10.8	5.7	25.9

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: April, 1997

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES, METEOSAT, GMS, INSAT.

Standard of comparison :Background field from Bracknell global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

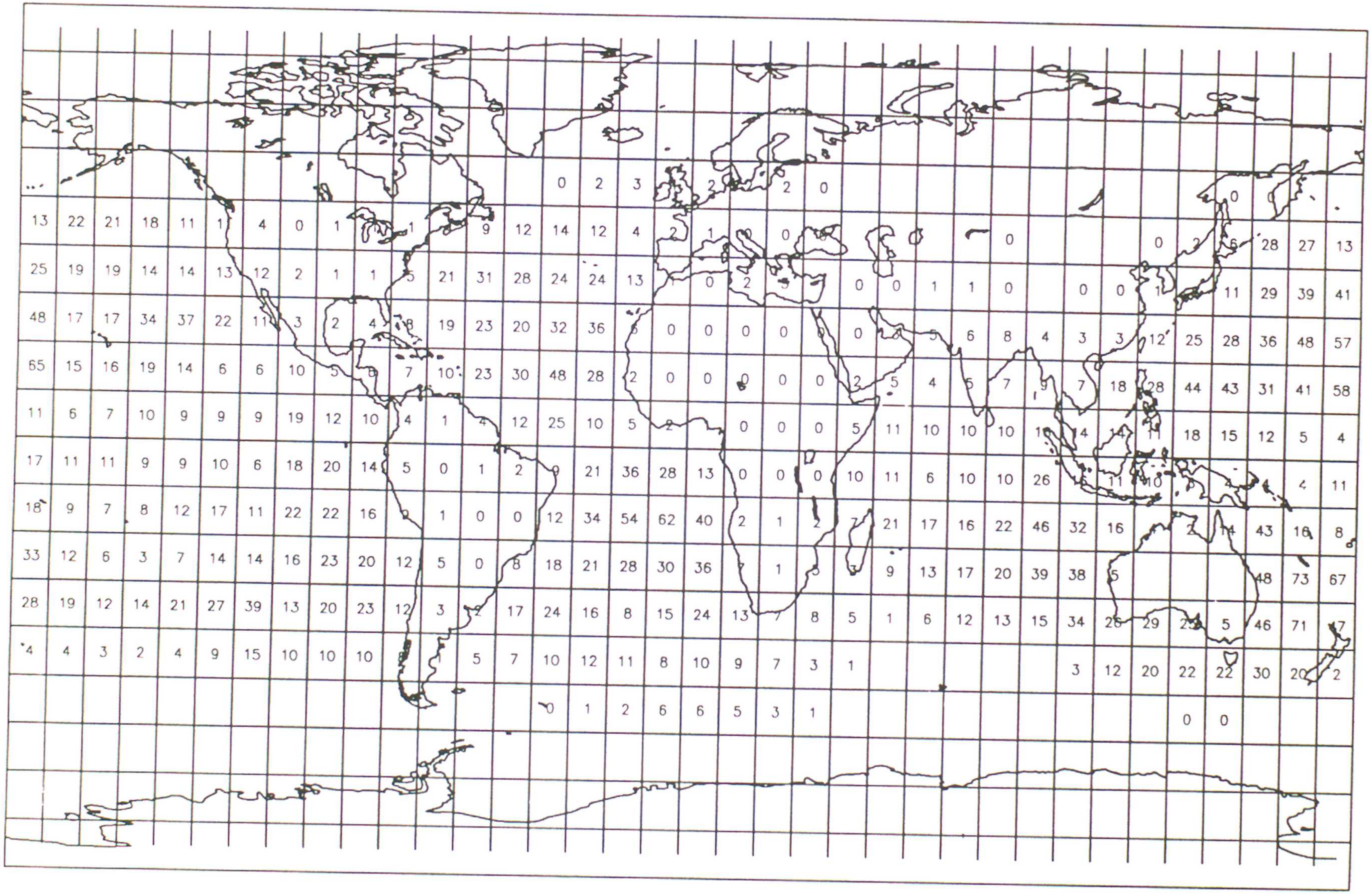
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
APRIL 1997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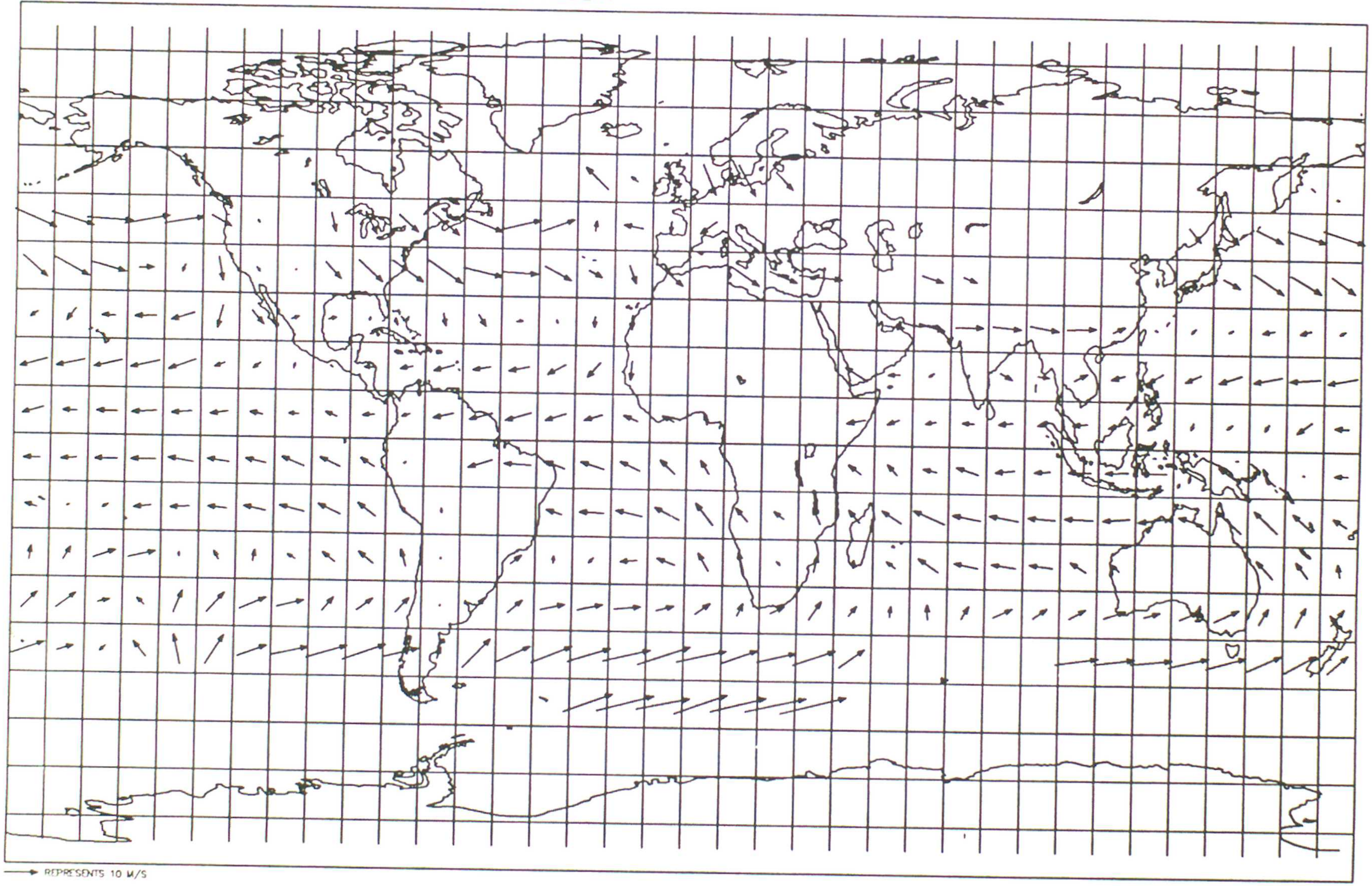
13 22 21 18 11 1 4 0 1 1 1 9 12 14 12 4 2 1 0 0 0 0 0 2 6 28 27 13
25 19 19 14 14 13 12 2 1 1 5 21 31 28 24 24 13 1 0 2 3 0 0 1 1 0 0 0 1 11 29 39 41
48 17 17 34 37 22 11 3 2 4 8 19 23 20 32 36 6 0 0 0 0 0 0 3 5 6 8 4 3 3 12 25 28 36 48 57
65 15 16 19 14 6 6 10 5 6 7 10 23 30 48 28 2 0 0 0 0 0 2 5 4 5 7 9 7 18 28 44 43 31 41 58
11 6 7 10 9 9 9 19 12 10 4 1 4 12 25 10 5 2 0 0 0 5 11 10 10 10 10 14 14 11 18 15 12 5 4
17 11 11 9 9 10 6 18 20 14 5 0 1 2 9 21 36 28 13 0 0 0 10 11 6 10 10 26 15 11 10 9 4 4 4 11
18 9 7 8 12 17 11 22 22 16 9 1 0 0 12 34 54 62 40 2 1 2 7 21 17 16 22 46 32 16 4 2 14 43 16 8
33 12 6 3 7 14 14 16 23 20 12 5 0 8 18 21 28 30 36 7 1 3 3 9 13 17 20 39 38 5 48 73 67
28 19 12 14 21 27 39 13 20 23 12 3 2 17 24 16 8 15 24 13 7 8 5 1 6 12 13 15 34 26 29 23 5 46 71 47
4 4 3 2 4 9 15 10 10 10 8 1 5 7 10 12 11 8 10 9 7 3 1 3 12 20 22 22 30 20 2
0 1 2 6 6 5 3 1 0 0

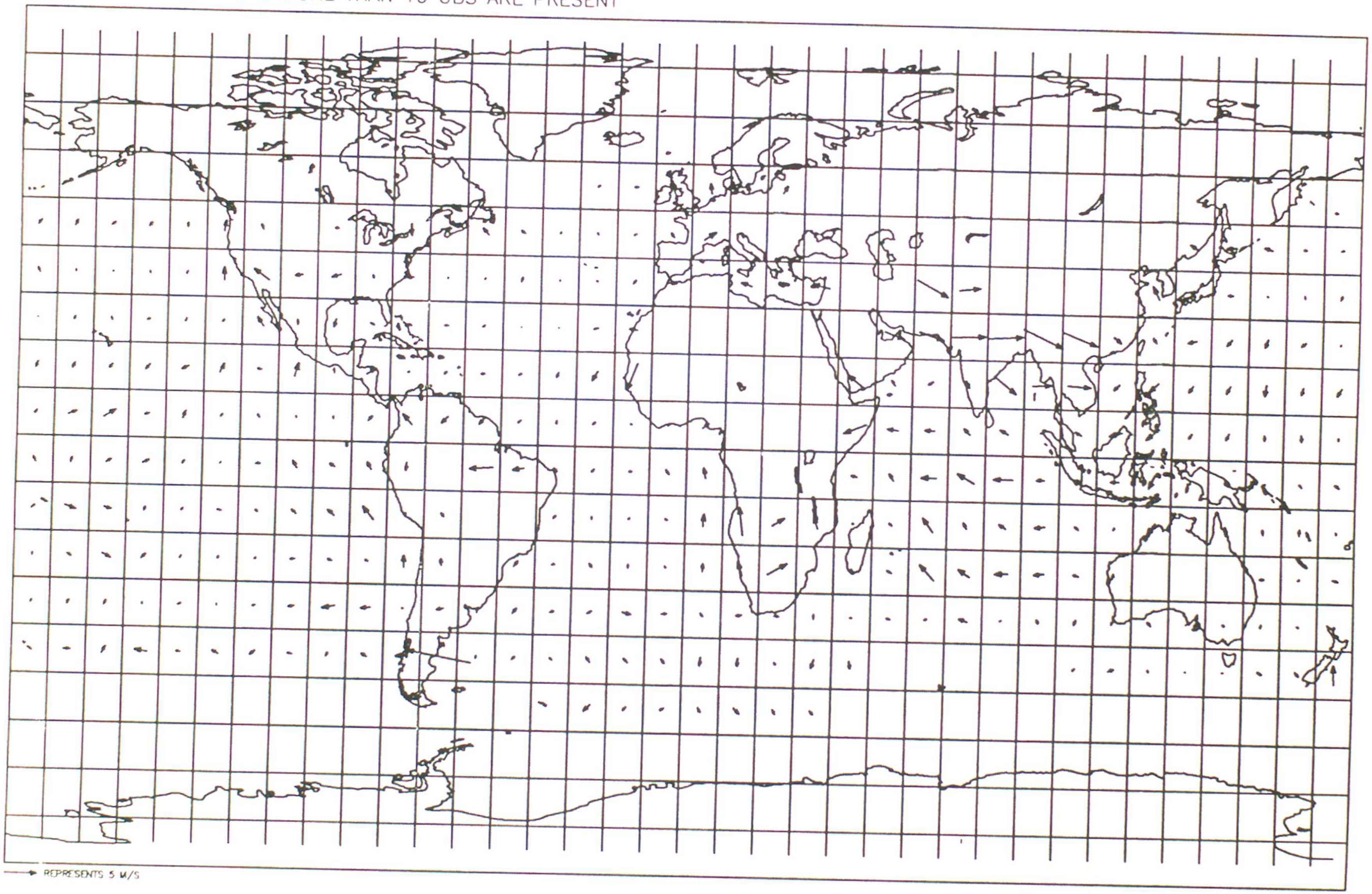
SATOB VECTOR MEAN WINDS BETWEEN 701–1000 HPA
APRIL 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 11

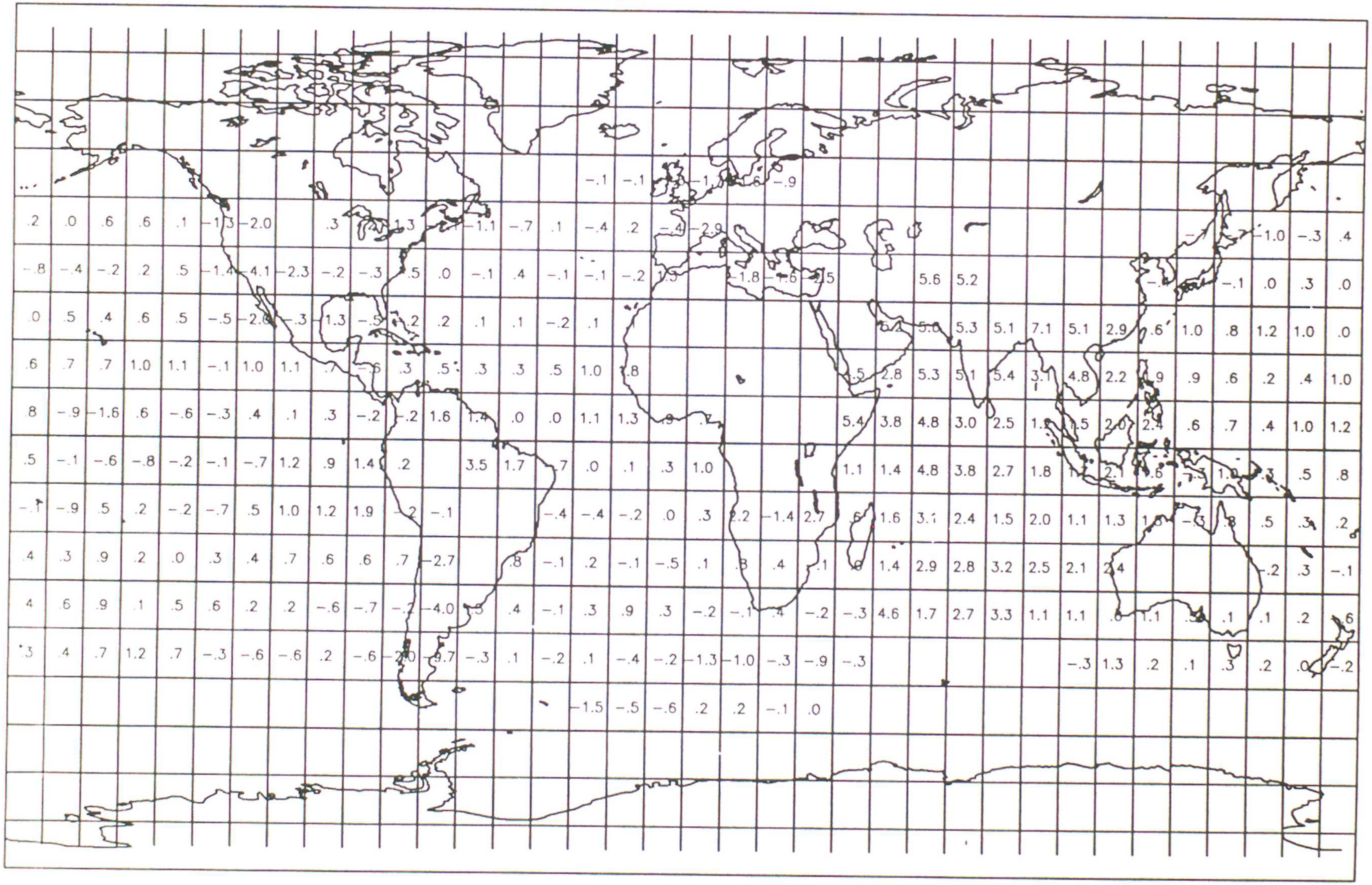

REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701–1000 HPA
APRIL 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

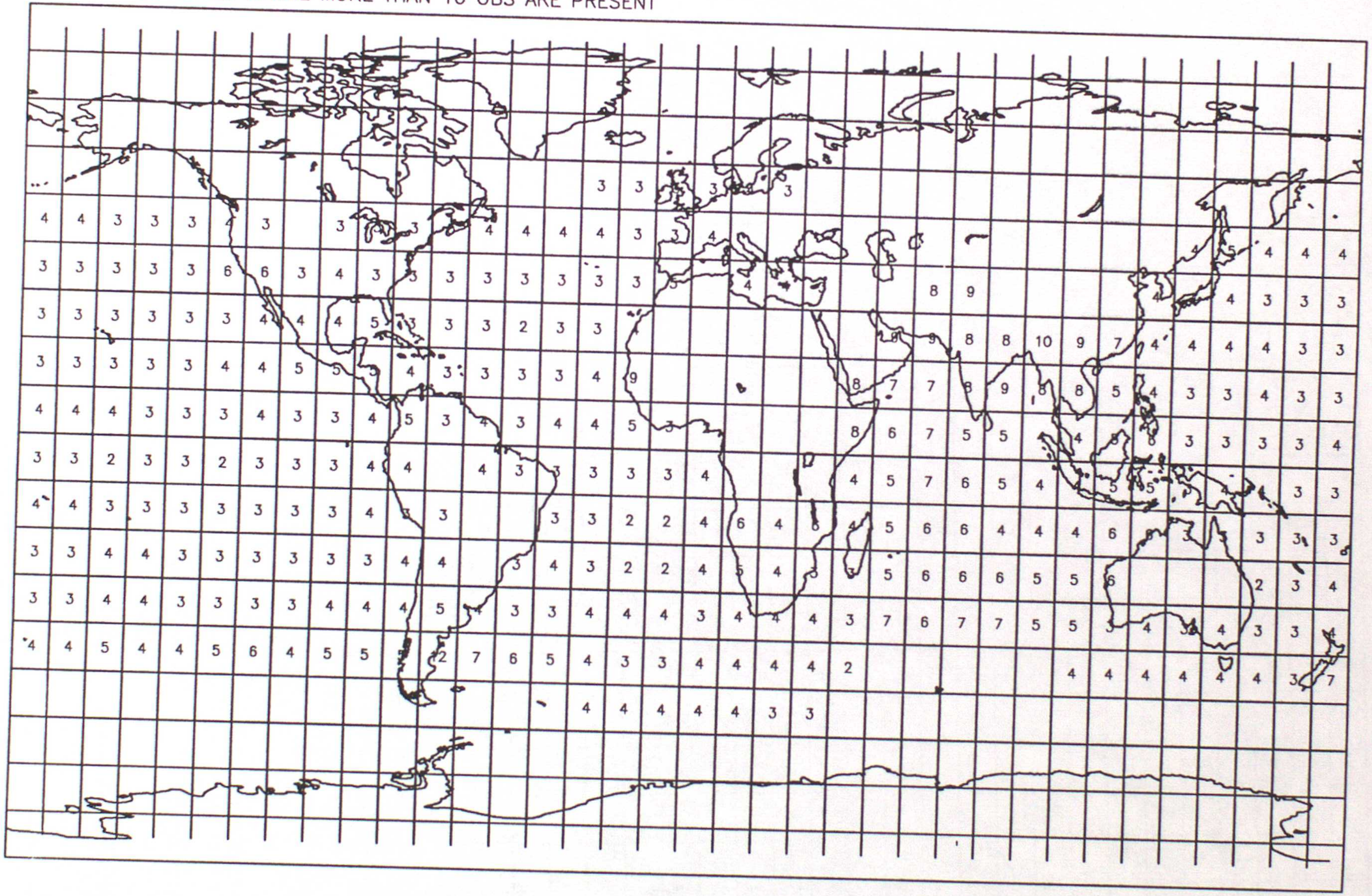
FIGURE 12



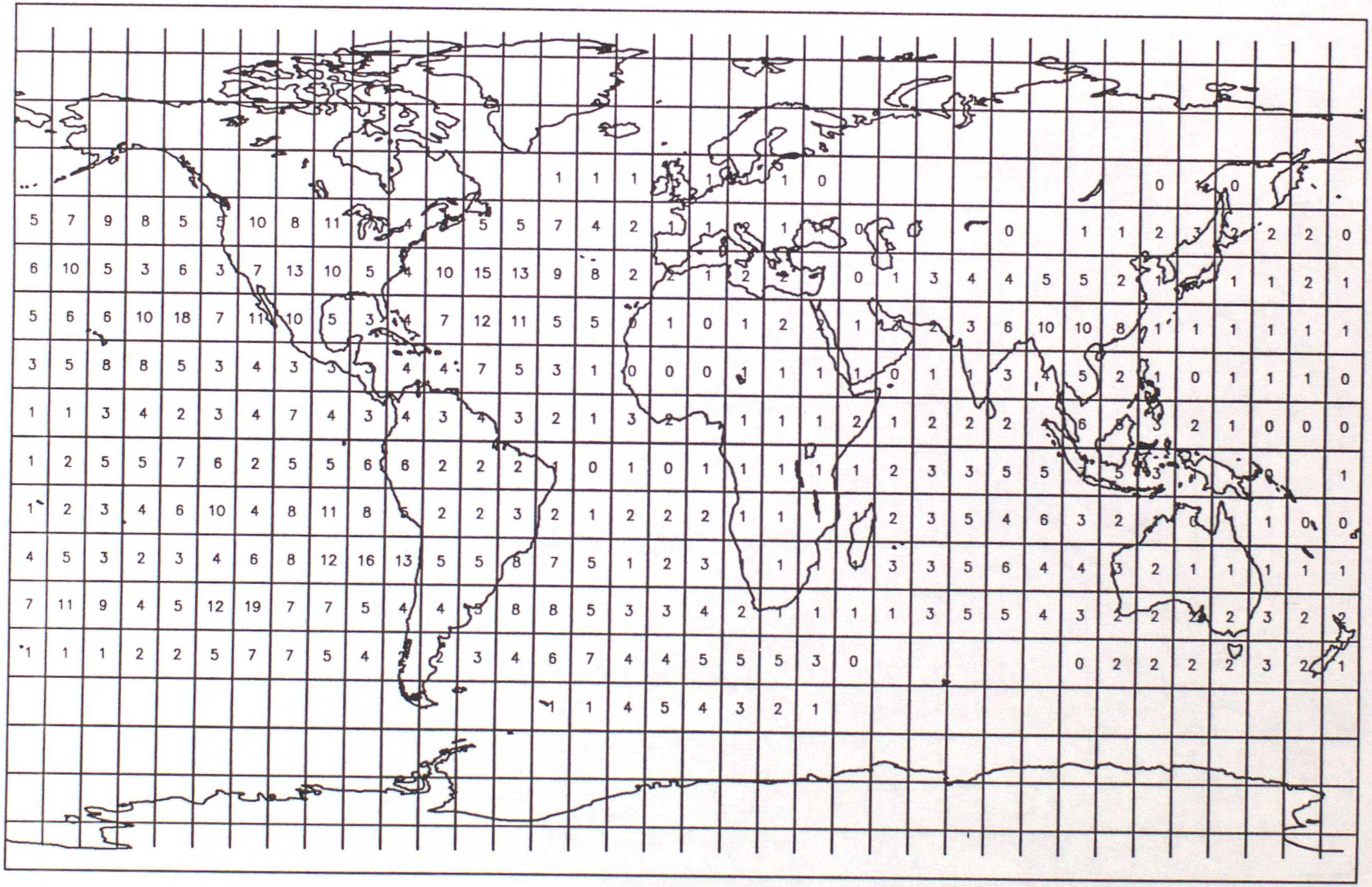
SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
APRIL 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-.1 -.1 -1. .6 -.9
.2 .0 .6 .6 .1 -1.3 -2.0 .3 1.3 -1.1 -.7 .1 -.4 .2 -.4 -2.9 -1.0 -.3 .4
-.8 -.4 -.2 .2 .5 -1.4 -4.1 -2.3 -.2 -.3 .5 .0 -.1 .4 -.1 -.1 -.2 1.3 -1.8 -.6 2.5 5.6 5.2 -.1 .0 .3 .0
.0 .5 .4 .6 .5 -.5 -2.6 -.3 -1.3 -.5 .2 .2 .1 .1 -.2 .1 5.2 5.6 5.3 5.1 7.1 5.1 2.9 .6 1.0 .8 1.2 1.0 .0
.6 .7 .7 1.0 1.1 -.1 1.0 1.1 .6 .3 .5 .3 .3 .5 1.0 .8 .5 2.8 5.3 5.1 5.4 3.1 4.8 2.2 .9 .9 .6 .2 .4 1.0
.8 -.9 -1.6 .6 -.6 -.3 .4 .1 .3 -.2 -.2 1.6 1.4 .0 .0 1.1 1.3 .9 .7 5.4 3.8 4.8 3.0 2.5 1.6 .5 2.0 2.4 .6 .7 .4 1.0 1.2
.5 -.1 -.6 -.8 -.2 -.1 -.7 1.2 .9 1.4 .2 3.5 1.7 .7 .0 .1 .3 1.0 1.1 1.4 4.8 3.8 2.7 1.8 1.7 2.1 1.6 1.3 1.0 .3 .5 .8
-.1 -.9 .5 .2 -.2 -.7 .5 1.0 1.2 1.9 .2 -.1 -.4 -.4 -.2 .0 .3 2.2 -1.4 2.7 .6 1.6 3.1 2.4 1.5 2.0 1.1 1.3 1.0 -.3 .8 .5 .3 .2
.4 .3 .9 .2 .0 .3 .4 .7 .6 .6 .7 -2.7 .8 -.1 .2 -.1 -.5 .1 .3 .4 .1 .0 1.4 2.9 2.8 3.2 2.5 2.1 2.4 .2 .3 -.1
.4 .6 .9 .1 .5 .6 .2 .2 -.6 -.7 -.2 -4.0 .5 .4 -.1 .3 .9 .3 -.2 -.1 .4 -.2 -.3 4.6 1.7 2.7 3.3 1.1 1.1 .6 1.1 .5 .1 .1 .2 .6
.3 .4 .7 1.2 .7 -.3 -.6 -.6 .2 -.6 -2.0 -3.7 -.3 .1 -.2 .1 -.4 -.2 -1.3 -1.0 -.3 -.9 -.3 -.3 1.3 .2 .1 .3 .2 .0 -.2
-1.5 -.5 -.6 .2 .2 -.1 .0

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
APRIL 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

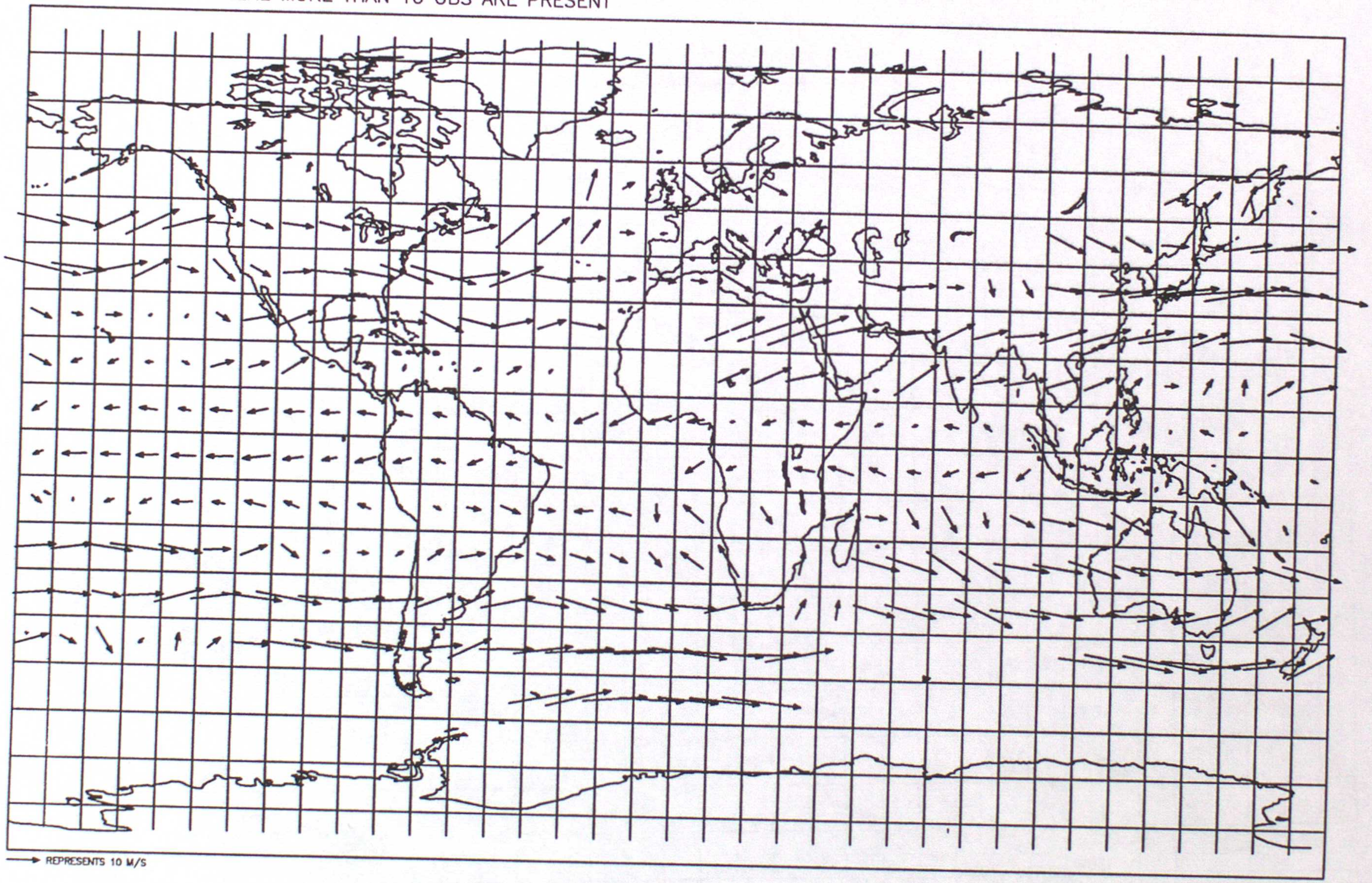

3 3 3 3
4 4 3 3 3 4 3 3 3 4 4 4 4 3 3 4
4 5 4 4 4
3 3 3 3 3 6 6 3 4 3 3 3 3 3 3 3 3 3 4 8 9
4 3 3 3
3 3 3 3 3 3 4 4 4 5 3 3 3 2 3 3
8 9 8 8 10 9 7 4 4 4 4 3 3
3 3 3 3 3 4 4 5 5 5 4 3 3 3 3 4 9
8 7 7 8 9 8 8 5 4 3 3 4 3 3
4 4 4 3 3 3 4 3 3 4 5 3 4 3 4 4 5 3
8 6 7 5 5 4 8 6 3 3 3 3 4
3 3 2 3 3 2 3 3 3 4 4 4 3 3 3 3 3 4
4 5 7 6 5 4 5 5 4 3 3
4 4 3 3 3 3 3 3 3 4 3 3 3 2 2 4 6 4
4 5 6 6 4 4 4 6 8 3 3 3 3
3 3 4 4 3 3 3 3 3 3 4 4 3 4 3 2 2 4 5 4 3
5 6 6 6 5 5 6 2 3 4
3 3 4 4 3 3 3 3 4 4 4 5 4 3 3 4 4 4 3 4 4 4 3 7 6 7 7 5 5 3 4 3 4 3 3 4
4 4 5 4 4 5 6 4 5 5 2 7 6 5 4 3 3 4 4 4 4 2
4 4 4 4 4 4 3 7
4 4 4 4 4 3 3

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
APRIL 1997


1 1 1 1 1 0 0 0
5 7 9 8 5 5 10 8 11 4 5 5 7 4 2 1 1 2 1 0 0 1 1 2 3 2 2 2 0
6 10 5 3 6 3 7 13 10 5 4 10 15 13 9 8 2 2 1 2 2 0 1 3 4 4 5 5 2 1 1 1 2 1
5 6 6 10 18 7 11 10 5 3 4 7 12 11 5 5 0 1 0 1 2 2 1 3 2 3 6 10 10 8 1 1 1 1 1 1
3 5 8 8 5 3 4 3 3 3 4 4 7 5 3 1 0 0 0 1 1 1 1 0 1 1 3 4 5 2 1 0 1 1 1 0
1 1 3 4 2 3 4 7 4 3 4 3 4 3 2 1 3 2 1 1 1 2 1 2 2 2 4 6 8 3 2 1 0 0 0
1 2 5 5 7 6 2 5 5 6 6 2 2 2 1 0 1 0 1 1 1 1 1 2 3 3 5 5 7 5 3 0 1
1 2 3 4 6 10 4 8 11 8 5 2 2 3 2 1 2 2 2 1 1 1 1 2 3 5 4 6 3 2 0 1 0 0
4 5 3 2 3 4 6 8 12 16 13 5 5 8 7 5 1 2 3 1 1 1 3 3 5 6 4 4 3 2 1 1 1 1 1
7 11 9 4 5 12 19 7 7 5 4 4 5 8 8 5 3 3 4 2 1 1 1 1 3 5 5 4 3 2 2 2 2 3 2 2
1 1 1 2 2 5 7 7 5 4 2 2 3 4 6 7 4 4 5 5 5 3 0 0 2 2 2 2 3 2 1
1 1 4 5 4 3 2 1

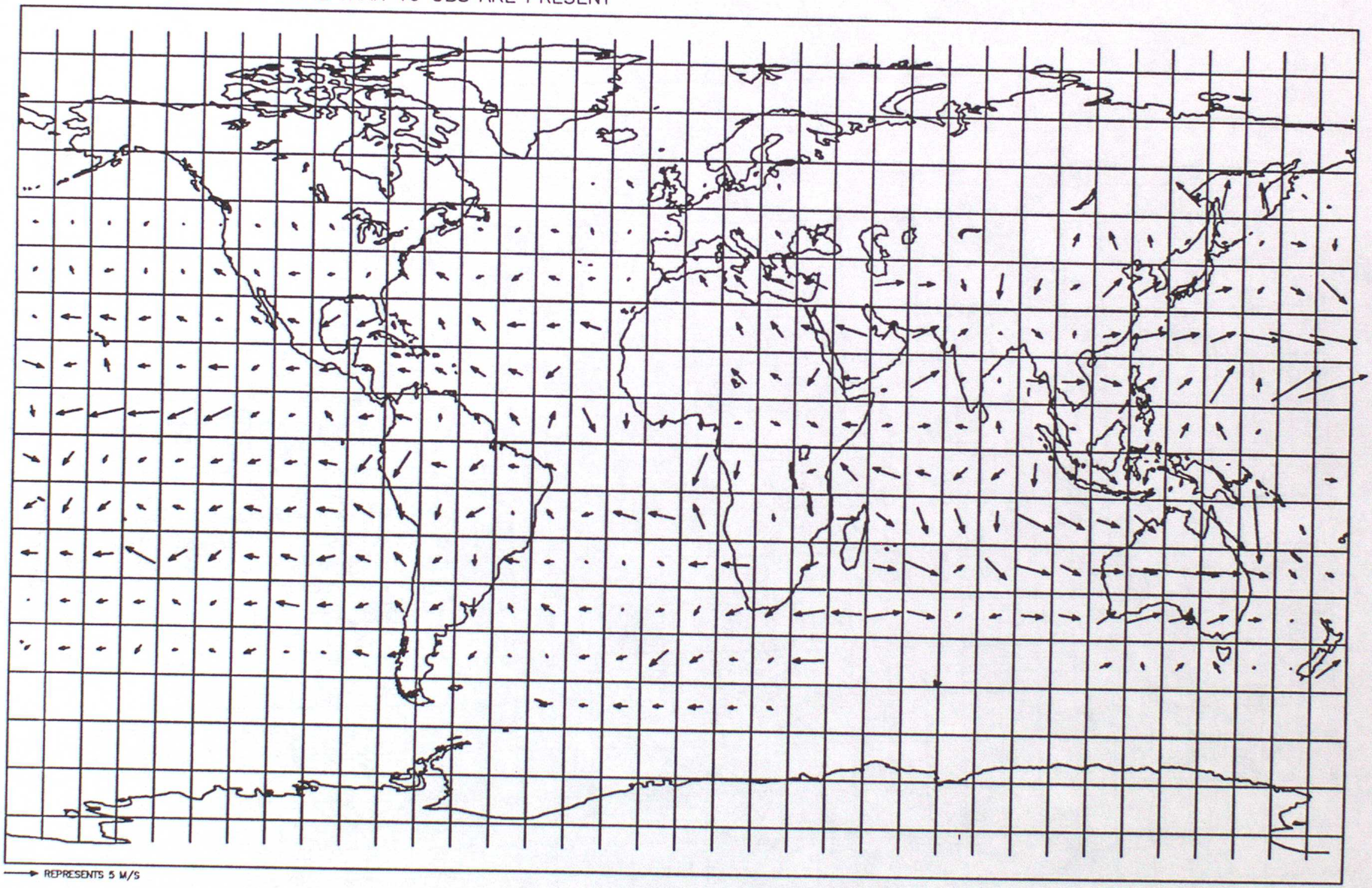
SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
APRIL 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16

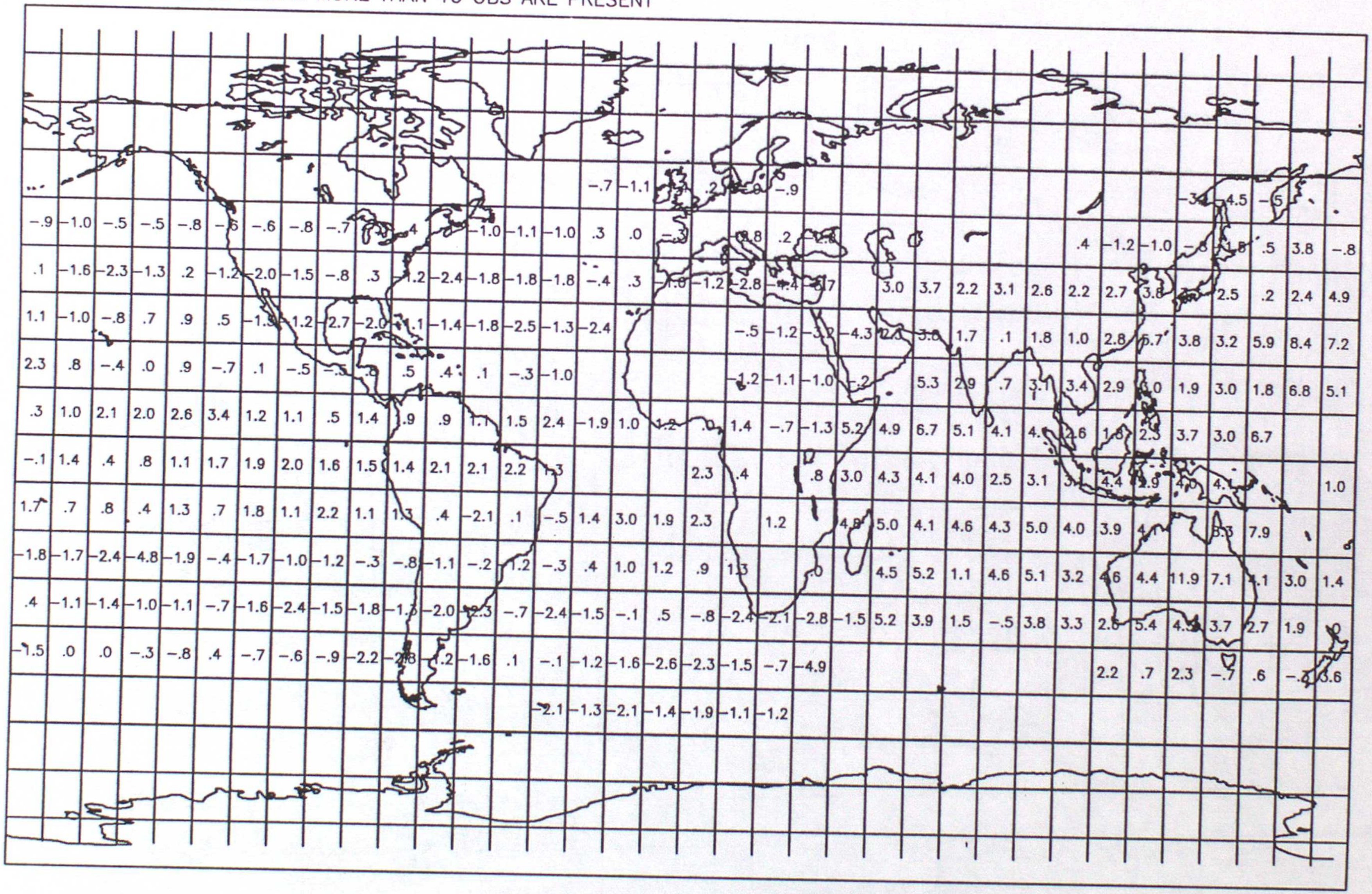

REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 401-700 HPA
APRIL 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 17


REPRESENTS 5 M/S

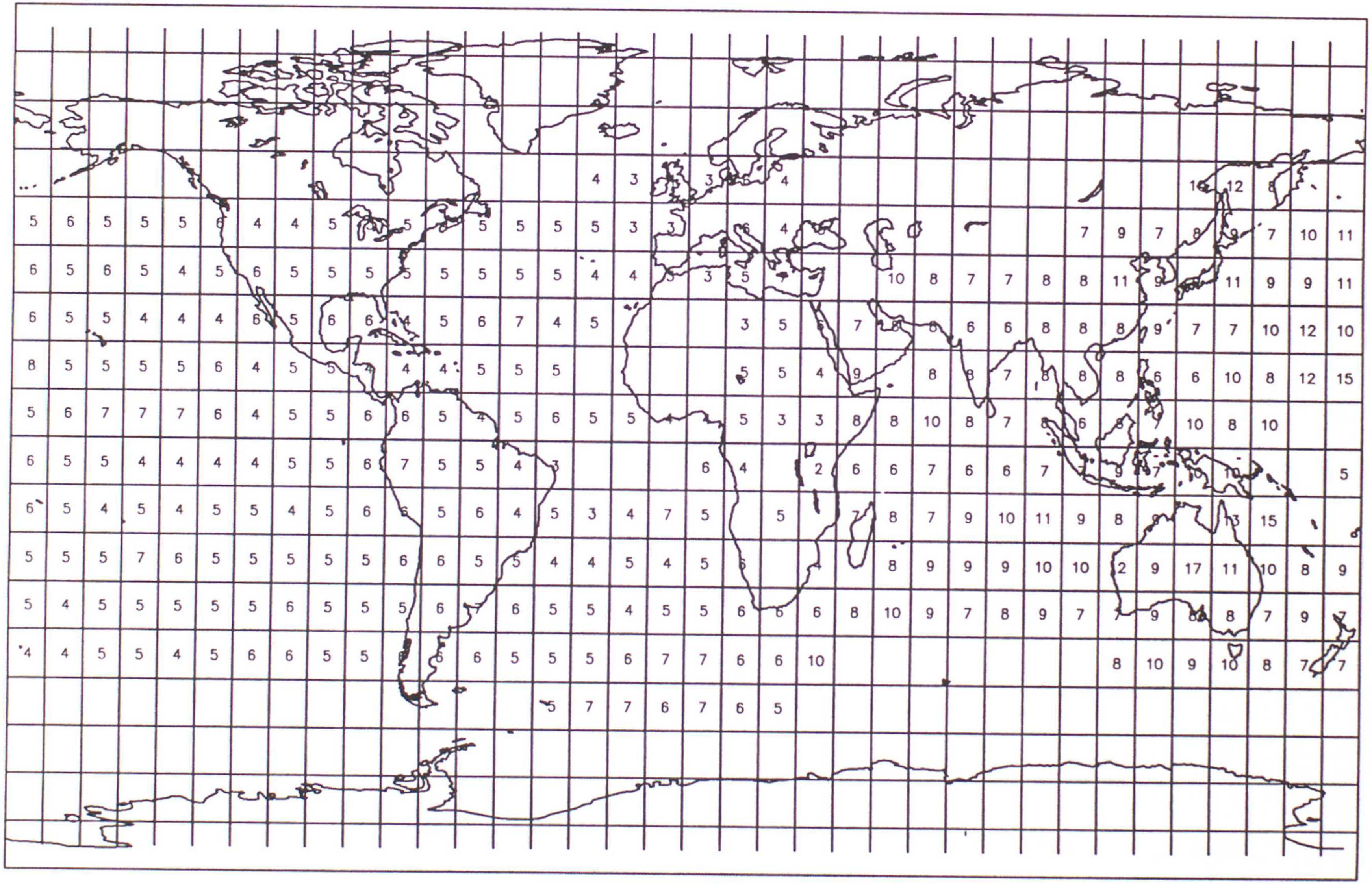
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
APRIL 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



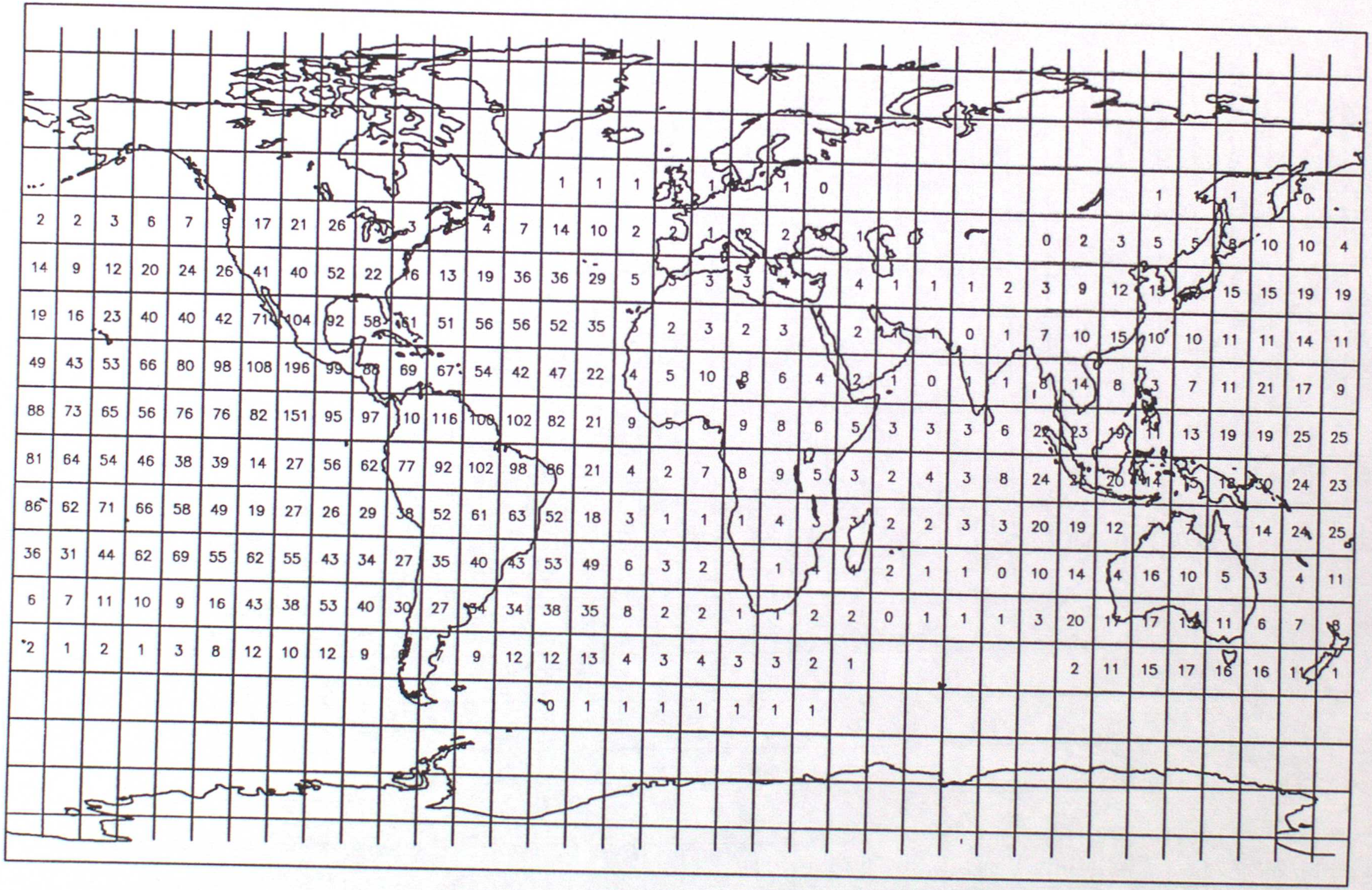
–.7 –1.1 .2 .0 –.9 –3.4 4.5 –.5
–.9 –1.0 –.5 –.5 –.8 –.6 –.6 –.8 –.7 .4 –1.0 –1.1 –1.0 .3 .0 –.3 .8 .2 .4 –1.2 –1.0 –.8 1.8 .5 3.8 –.8
.1 –1.6 –2.3 –1.3 .2 –1.2 –2.0 –1.5 –.8 .3 –1.2 –2.4 –1.8 –1.8 –1.8 –.4 .3 1.0 –1.2 –2.8 –4.4 –3.7 3.0 3.7 2.2 3.1 2.6 2.2 2.7 3.8 2.5 .2 2.4 4.9
1.1 –1.0 –.8 .7 .9 .5 –1.3 –1.2 –2.7 –2.0 –1.1 –1.4 –1.8 –2.5 –1.3 –2.4 –.5 –1.2 –3.2 –4.3 2.3 3.6 1.7 .1 1.8 1.0 2.8 5.7 3.8 3.2 5.9 8.4 7.2
2.3 .8 –.4 .0 .9 –.7 .1 –.5 –.5 .8 .5 .4 .1 –.3 –1.0 –1.2 –1.1 –1.0 .2 5.3 2.9 .7 3.1 3.4 2.9 3.0 1.9 3.0 1.8 6.8 5.1
.3 1.0 2.1 2.0 2.6 3.4 1.2 1.1 .5 1.4 .9 .9 1.1 1.5 2.4 –1.9 1.0 1.2 .0 1.4 –.7 –1.3 5.2 4.9 6.7 5.1 4.1 4.5 2.6 1.8 2.5 3.7 3.0 6.7
–.1 1.4 .4 .8 1.1 1.7 1.9 2.0 1.6 1.5 1.4 2.1 2.1 2.2 1.3 2.3 .4 .8 3.0 4.3 4.1 4.0 2.5 3.1 3.1 4.4 4.9 4.0 4.1 1.0
1.7 .7 .8 .4 1.3 .7 1.8 1.1 2.2 1.1 1.3 .4 –2.1 .1 –.5 1.4 3.0 1.9 2.3 1.2 4.8 5.0 4.1 4.6 4.3 5.0 4.0 3.9 4.1 5.3 7.9
–1.8 –1.7 –2.4 –4.8 –1.9 –.4 –1.7 –1.0 –1.2 –.3 –.8 –1.1 –.2 1.2 –.3 .4 1.0 1.2 .9 1.3 .0 4.5 5.2 1.1 4.6 5.1 3.2 4.6 4.4 11.9 7.1 4.1 3.0 1.4
.4 –1.1 –1.4 –1.0 –1.1 –.7 –1.6 –2.4 –1.5 –1.8 –1.3 –2.0 –2.3 –.7 –2.4 –1.5 –.1 .5 –.8 –2.4 –2.1 –2.8 –1.5 5.2 3.9 1.5 –.5 3.8 3.3 2.5 5.4 4.5 3.7 2.7 1.9 .0
–1.5 .0 .0 –.3 –.8 .4 –.7 –.6 –.9 –2.2 –2.8 –1.2 –1.6 .1 –.1 –1.2 –1.6 –2.6 –2.3 –1.5 –.7 –4.9 2.2 .7 2.3 –.7 .6 –.3 3.6
–2.1 –1.3 –2.1 –1.4 –1.9 –1.1 –1.2

6

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
APRIL 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

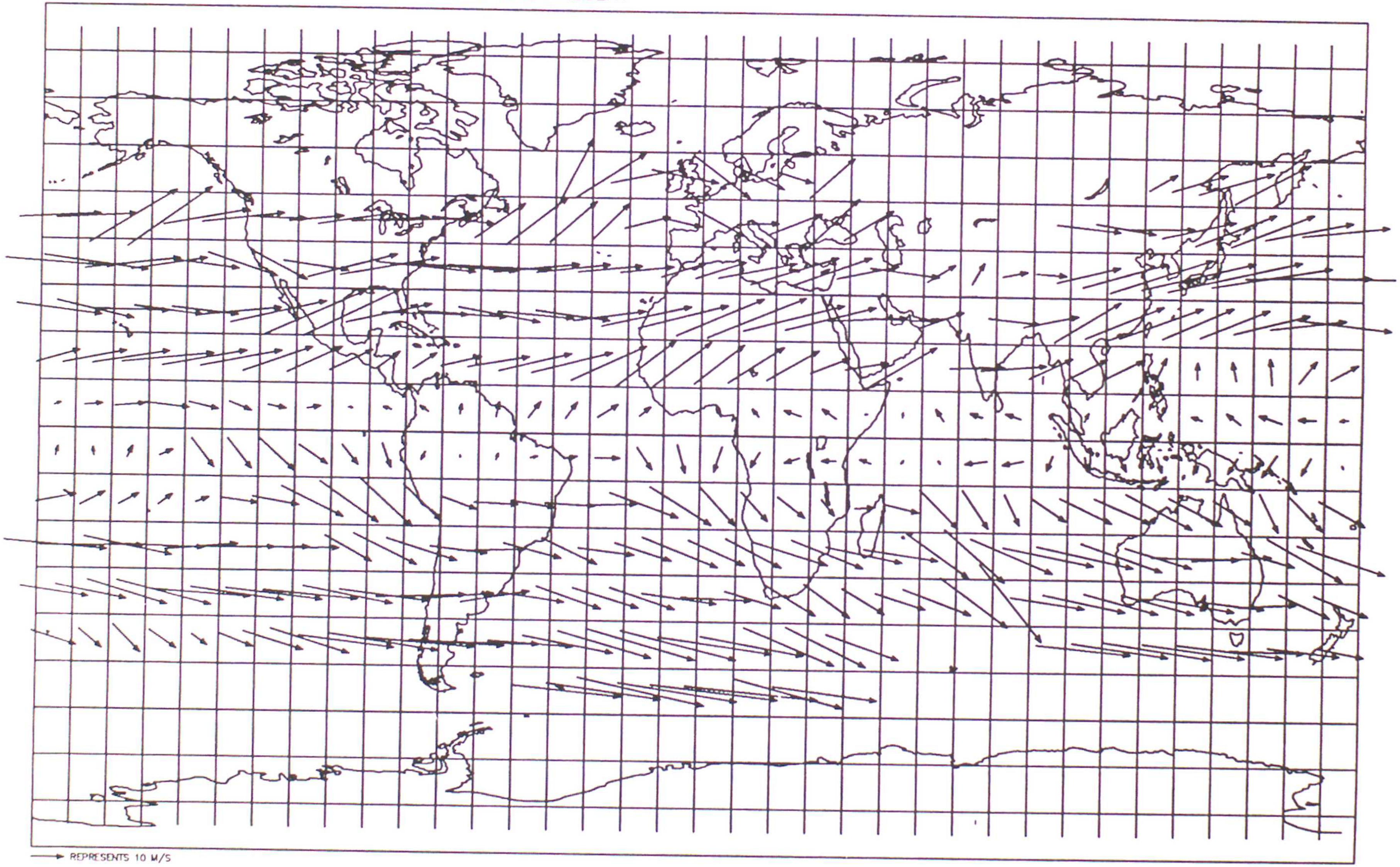

4 3 3 5 4 16 12 8
5 6 5 5 5 6 4 4 5 5 5 5 5 5 3 3 6 4 6 7 9 7 8 9 7 10 11
6 5 6 5 4 5 6 5 5 5 5 5 5 5 5 4 4 5 3 5 7 10 8 7 7 8 8 11 9 11 9 9 11
6 5 5 4 4 4 6 5 6 6 4 5 6 7 4 5 3 5 6 7 8 8 6 6 8 8 8 9 7 7 10 12 10
8 5 5 5 5 6 4 5 5 4 4 4 5 5 5 5 5 4 9 8 8 7 8 8 8 6 6 10 8 12 15
5 6 7 7 7 6 4 5 5 6 6 5 4 5 6 5 5 4 5 3 3 8 8 10 8 7 8 6 8 7 10 8 10
6 5 5 4 4 4 4 5 5 6 7 5 5 4 3 6 4 2 6 6 7 6 6 7 9 7 10 10 5
6 5 4 5 4 5 5 4 5 6 6 5 6 4 5 3 4 7 5 5 7 8 7 9 10 11 9 8 8 13 15
5 5 5 7 6 5 5 5 5 5 6 6 5 5 4 4 5 4 5 6 4 8 9 9 9 10 10 12 9 17 11 10 8 9
5 4 5 5 5 5 5 6 5 5 5 6 7 6 5 5 4 5 5 6 6 6 8 10 9 7 8 9 7 7 9 6 8 7 9 7
4 4 5 5 4 5 6 6 5 5 6 6 6 5 5 5 6 7 7 6 6 10 8 10 9 10 8 7 7
5 7 7 6 7 6 5

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
APRIL 1997


1 1 1 1 1 1 0 1 1 1 0
2 2 3 6 7 9 17 21 26 3 4 7 14 10 2 2 1 2 2 1 0 2 3 5 5 8 10 10 4
14 9 12 20 24 26 41 40 52 22 16 13 19 36 36 29 5 5 3 3 4 1 1 1 2 3 9 12 13 15 15 19 19
19 16 23 40 40 42 71 104 92 58 61 51 56 56 52 35 3 2 3 2 3 2 1 1 0 1 7 10 15 10 10 11 11 14 11
49 43 53 66 80 98 108 196 99 88 69 67 54 42 47 22 4 5 10 8 6 4 2 1 0 1 1 8 14 8 3 7 11 21 17 9
88 73 65 56 76 76 82 151 95 97 10 116 100 102 82 21 9 5 8 9 8 6 5 3 3 3 6 22 23 19 11 13 19 19 25 25
81 64 54 46 38 39 14 27 56 62 77 92 102 98 86 21 4 2 7 8 9 5 3 2 4 3 8 24 25 20 14 15 18 30 24 23
86 62 71 66 58 49 19 27 26 29 38 52 61 63 52 18 3 1 1 1 4 3 3 2 2 3 3 20 19 12 7 7 7 14 24 25
36 31 44 62 69 55 62 55 43 34 27 35 40 43 53 49 6 3 2 1 4 4 2 1 1 0 10 14 4 16 10 5 3 4 11
6 7 11 10 9 16 43 38 53 40 30 27 34 34 38 35 8 2 2 1 1 2 2 0 1 1 1 3 20 17 17 13 11 6 7 8
2 1 2 1 3 8 12 10 12 9 7 9 12 12 13 4 3 4 3 3 2 1 2 11 15 17 16 16 11 1
0 1 1 1 1 1 1 1

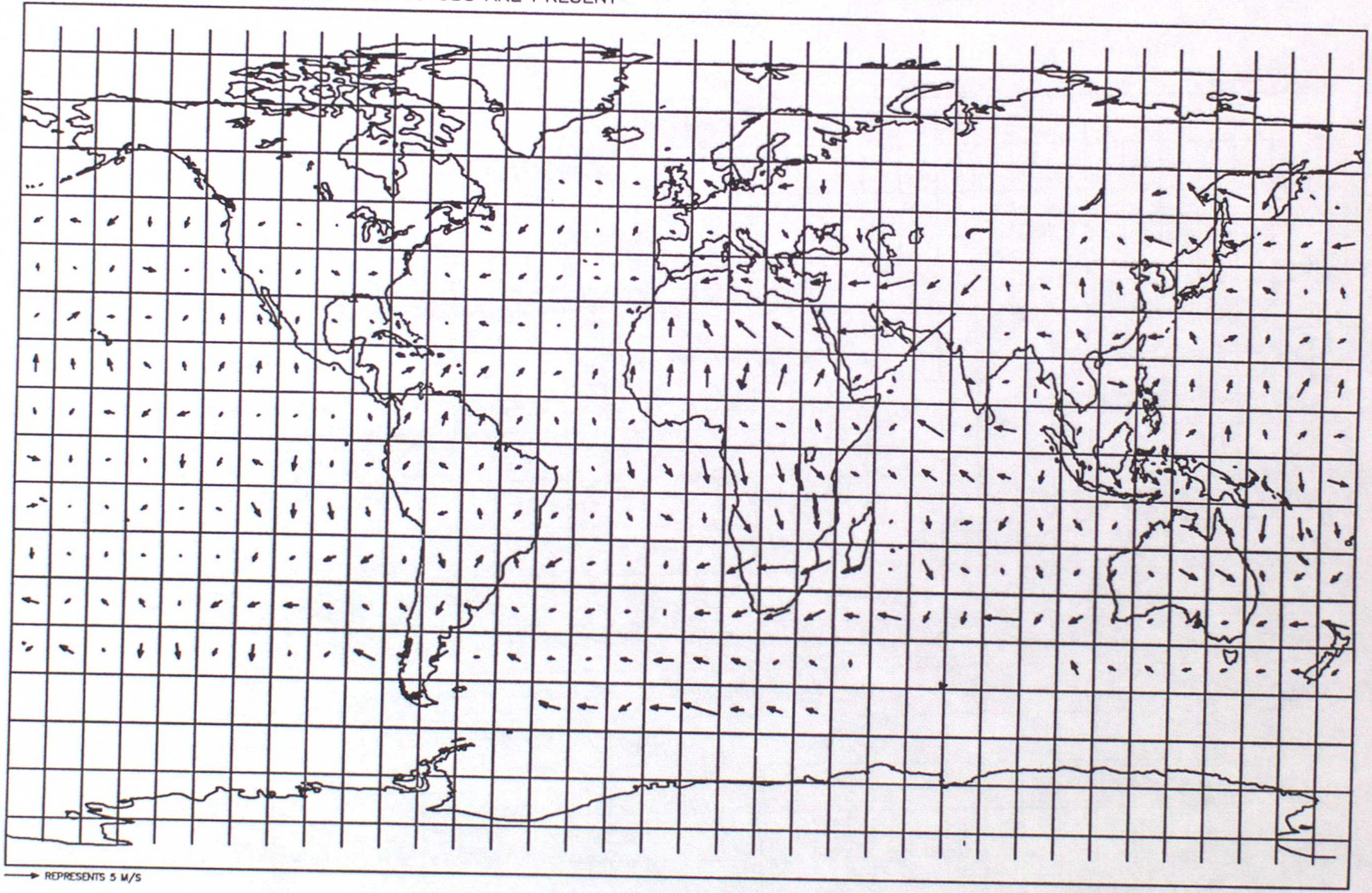
SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA
APRIL 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21

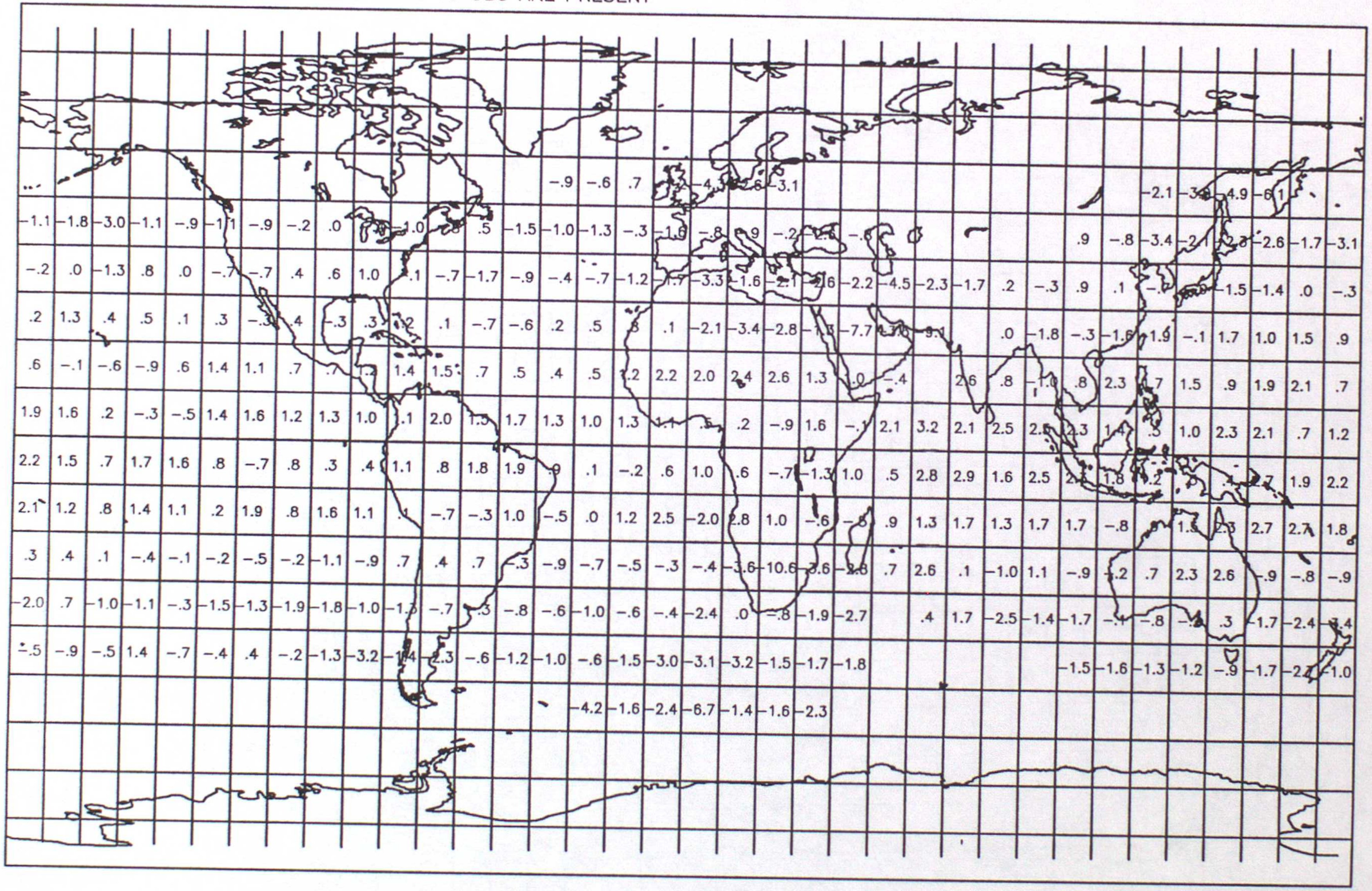

REPRESENTS 10 M/S

SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 101–400 HPA
APRIL 1997
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

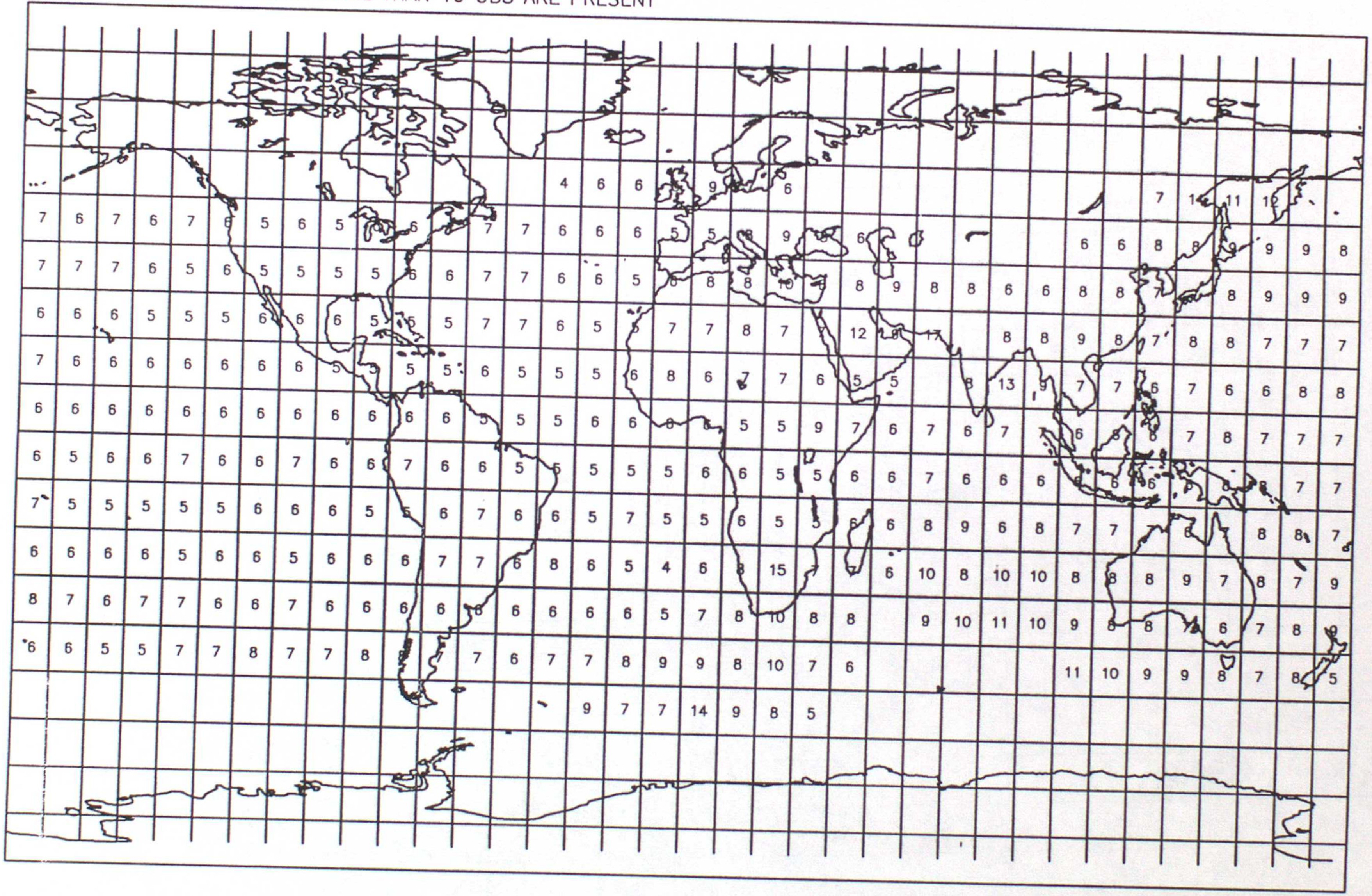
FIGURE 22


REPRESENTS 5 M/S

SATOBS : MEAN O-B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
APRIL 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-.9 -.6 .7 -4. -3.1 -2.1 -4.9
-1.1 -1.8 -3.0 -1.1 -.9 -1.1 -.9 -.2 .0 -1.0 .5 -1.5 -1.0 -1.3 -.3 -1.6 -.8 .9 -.2 -.8 .9 -.8 -3.4 -2.1 -2.3 -2.6 -1.7 -3.1
-.2 .0 -1.3 .8 .0 -.7 -.7 .4 .6 1.0 .1 -.7 -1.7 -.9 -.4 -.7 -1.2 -1.7 -3.3 -1.6 -2.1 -2.6 -2.2 -4.5 -2.3 -1.7 .2 -.3 .9 .1 -1.5 -1.4 .0 -.3
.2 1.3 .4 .5 .1 .3 -.3 .4 -.3 .3 .2 .1 -.7 -.6 .2 .5 .3 .1 -2.1 -3.4 -2.8 -1.3 -7.7 -9.1 .0 -1.8 -.3 -1.6 1.9 -.1 1.7 1.0 1.5 .9
.6 -.1 -.6 -.9 .6 1.4 1.1 .7 .7 1.2 1.4 1.5 .7 .5 .4 .5 1.2 2.2 2.0 2.4 2.6 1.3 .0 -.4 2.6 .8 -1.0 .8 2.3 .7 1.5 .9 1.9 2.1 .7
1.9 1.6 .2 -.3 -.5 1.4 1.6 1.2 1.3 1.0 .1 2.0 1.5 1.7 1.3 1.0 1.3 -1.1 .5 .2 -.9 1.6 -.1 2.1 3.2 2.1 2.5 2.5 2.3 1.4 .5 1.0 2.3 2.1 .7 1.2
2.2 1.5 .7 1.7 1.6 .8 -.7 .8 .3 .4 1.1 .8 1.8 1.9 .9 .1 -.2 .6 1.0 .6 -.7 -1.3 1.0 .5 2.8 2.9 1.6 2.5 2.1 1.8 1.2 .7 1.9 2.2
2.1 1.2 .8 1.4 1.1 .2 1.9 .8 1.6 1.1 .1 -.7 -.3 1.0 -.5 .0 1.2 2.5 -2.0 2.8 1.0 -.6 -.6 .9 1.3 1.7 1.3 1.7 1.7 -.8 .8 1.5 2.3 2.7 2.7 1.8
.3 .4 .1 -.4 -.1 -.2 -.5 -.2 -1.1 -.9 .7 .4 .7 -.3 -.9 -.7 -.5 -.3 -.4 -3.6 -10.6 -3.6 -2.8 .7 2.6 .1 -1.0 1.1 -.9 -.2 .7 2.3 2.6 -.9 -.8 -.9
-2.0 .7 -1.0 -1.1 -.3 -1.5 -1.3 -1.9 -1.8 -1.0 -1.3 -.7 .3 -.8 -.6 -1.0 -.6 -.4 -2.4 .0 -.8 -1.9 -2.7 .4 1.7 -2.5 -1.4 -1.7 -.1 -.8 -.3 .3 -1.7 -2.4 -3.4
-.5 -.9 -.5 1.4 -.7 -.4 .4 -.2 -1.3 -3.2 -1.4 -2.3 -.6 -1.2 -1.0 -.6 -1.5 -3.0 -3.1 -3.2 -1.5 -1.7 -1.8 -1.5 -1.6 -1.3 -1.2 -.9 -1.7 -2.2 -1.0
-4.2 -1.6 -2.4 -6.7 -1.4 -1.6 -2.3

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
APRIL 1997
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

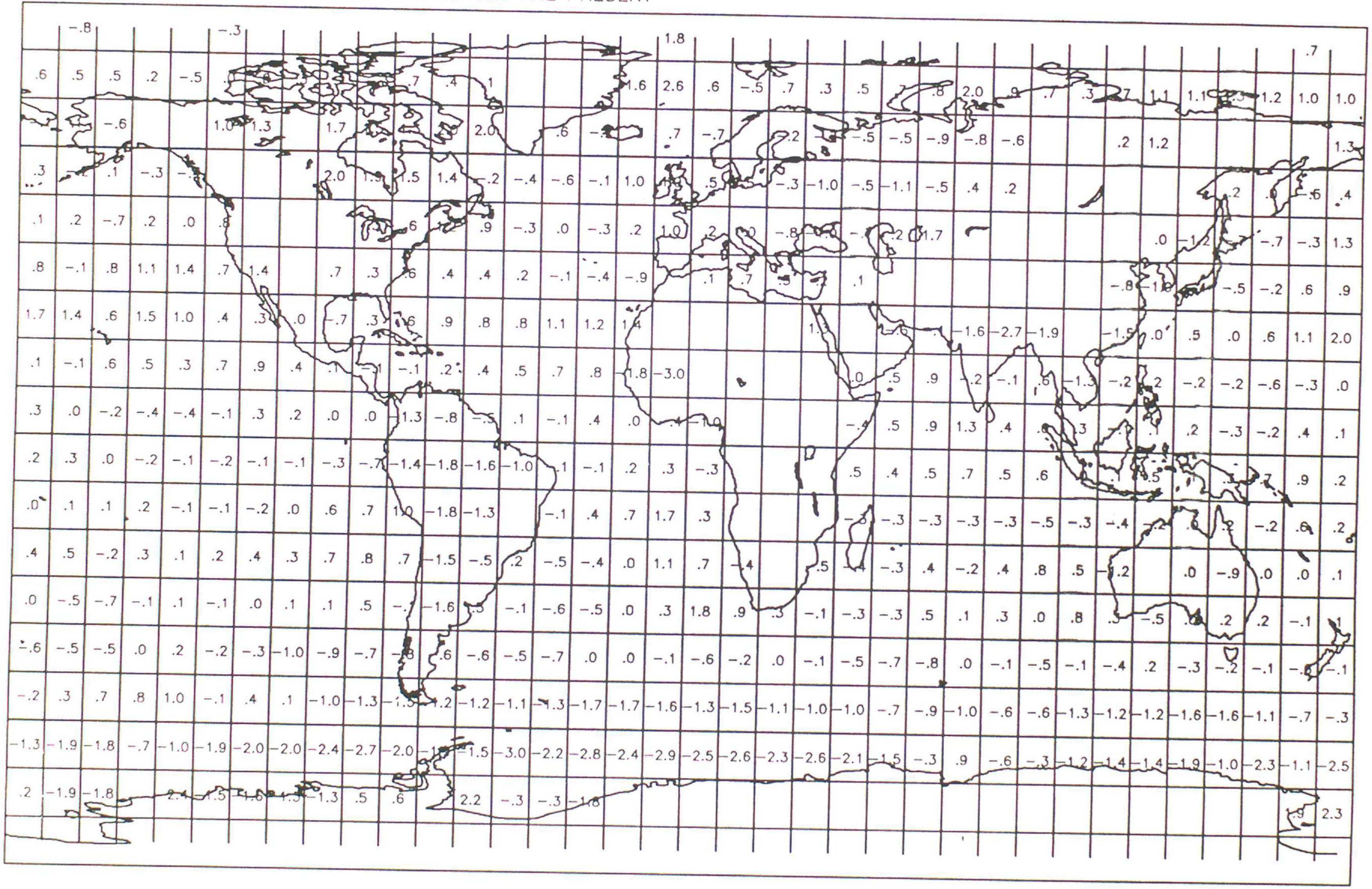
MONTH: April, 1997

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-12, NOAA-14 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer: 850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa
	:Mean observation minus background temperature differences

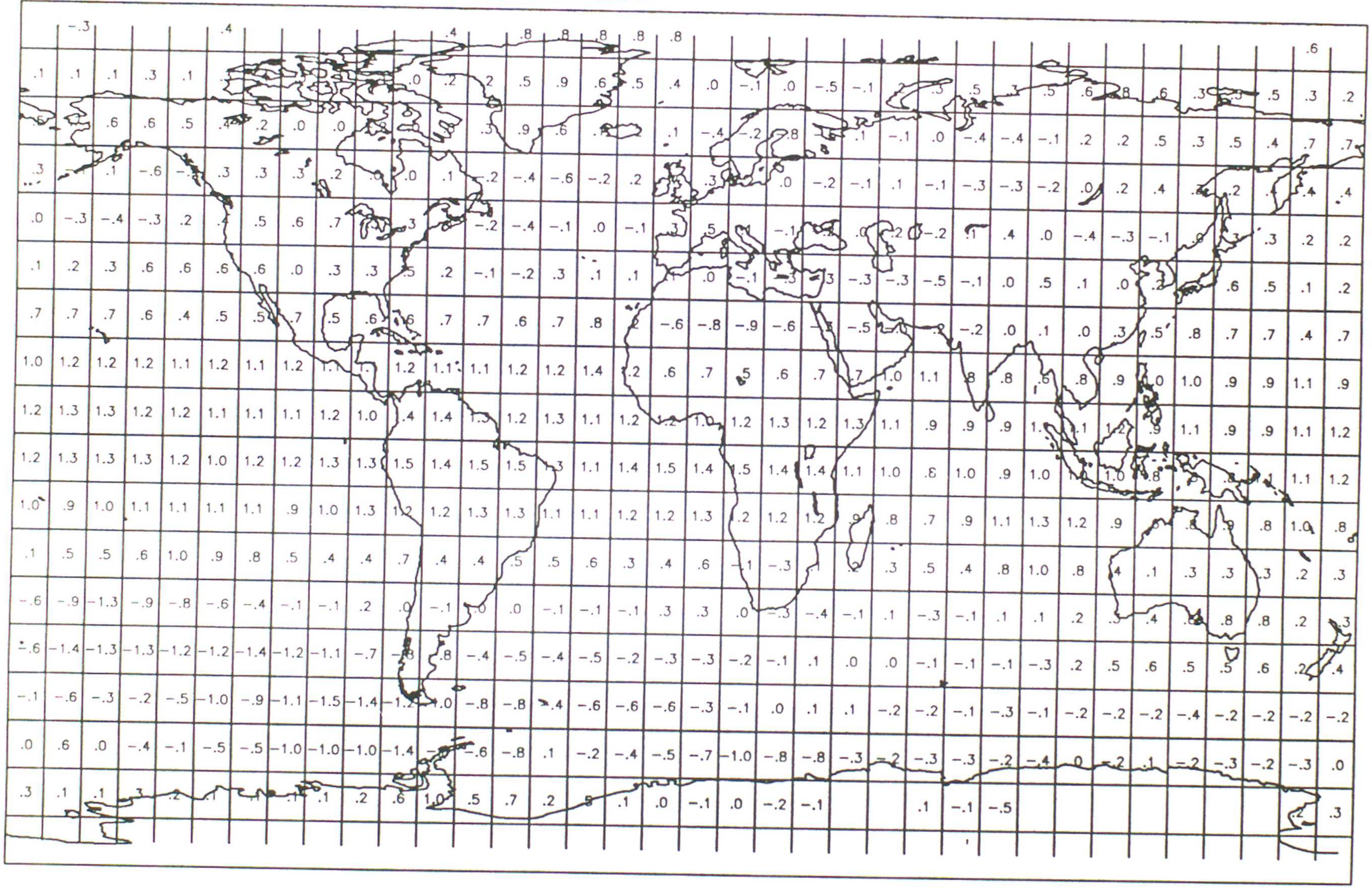
500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
APRIL 1997
NOAA-12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 25



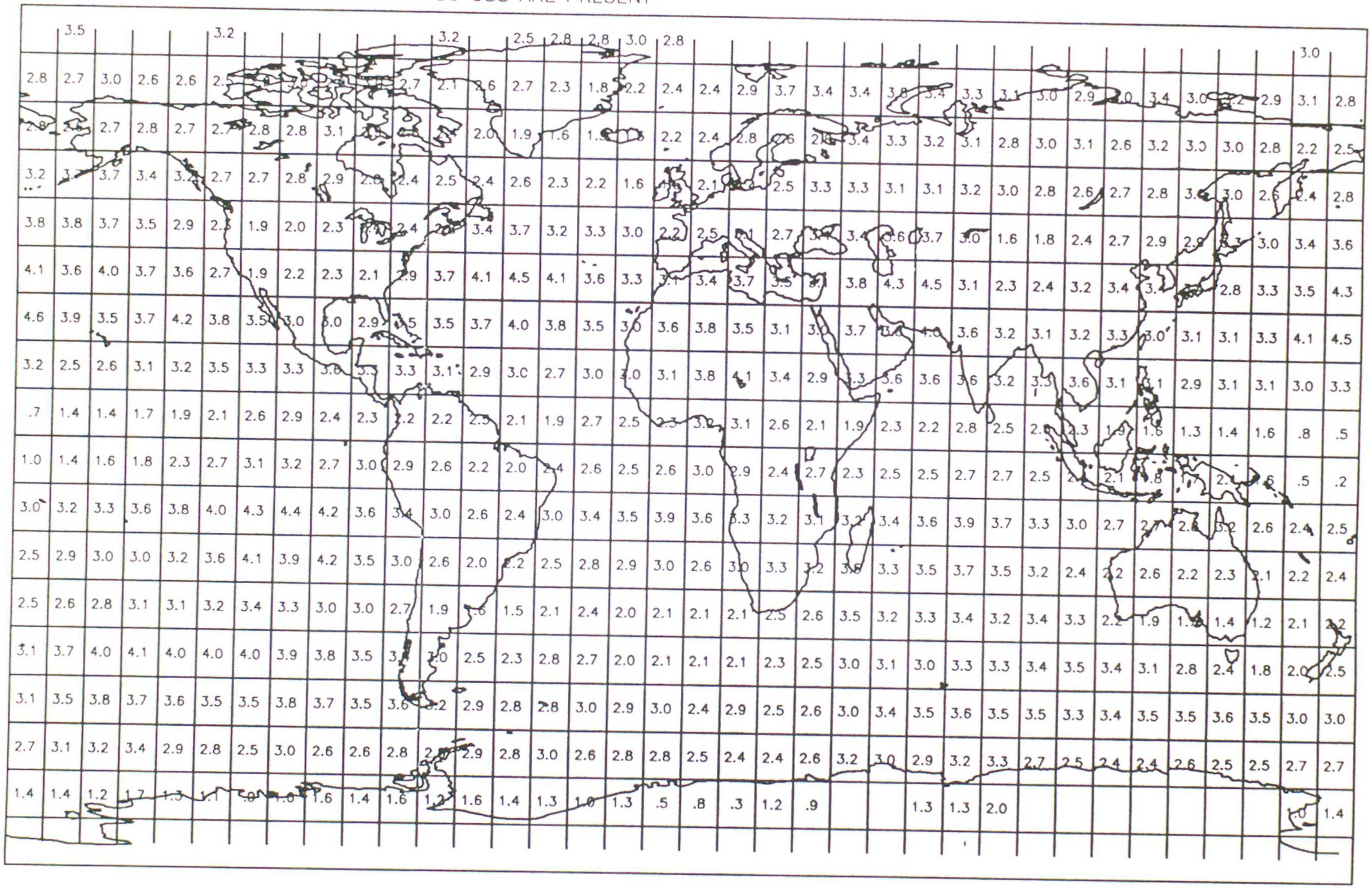
500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
APRIL 1997
NOAA-12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 26



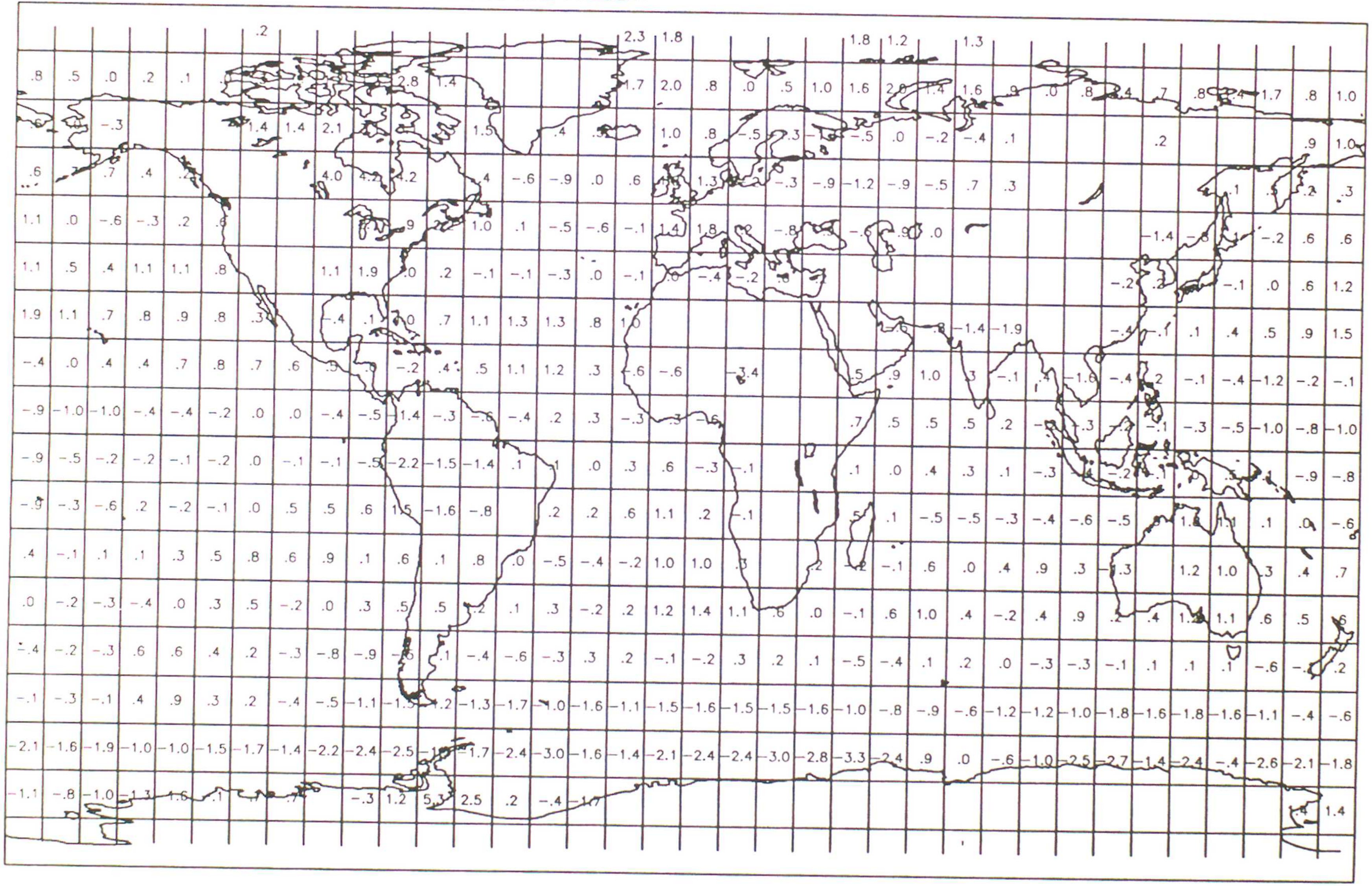
500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
APRIL 1997
NOAA-12, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 27


3.5 3.2 3.2 2.5 2.8 2.8 3.0 2.8 3.0
2.8 2.7 3.0 2.6 2.6 2.7 2.1 2.6 2.7 2.3 1.8 2.2 2.4 2.4 2.9 3.7 3.4 3.4 3.3 3.1 3.0 2.9 3.4 3.0 2.9 3.1 2.8
2.7 2.8 2.7 2.8 2.8 3.1 2.0 1.9 1.6 2.2 2.4 2.8 3.4 3.3 3.2 3.1 2.8 3.0 3.1 2.6 3.2 3.0 3.0 2.8 2.2 2.5
3.2 3.7 3.4 2.7 2.7 2.8 2.9 2.4 2.5 2.4 2.6 2.3 2.2 1.6 2.1 2.5 3.3 3.3 3.1 3.1 3.2 3.0 2.8 2.6 2.7 2.8 3.0 2.4 2.8
3.8 3.8 3.7 3.5 2.9 1.9 2.0 2.3 2.4 3.4 3.7 3.2 3.3 3.0 2.2 2.5 2.7 3.4 3.7 3.0 1.6 1.8 2.4 2.7 2.9 3.0 3.4 3.6
4.1 3.6 4.0 3.7 3.6 2.7 1.9 2.2 2.3 2.1 2.9 3.7 4.1 4.5 4.1 3.6 3.3 3.4 3.7 3.8 4.3 4.5 3.1 2.3 2.4 3.2 3.4 2.8 3.3 3.5 4.3
4.6 3.9 3.5 3.7 4.2 3.8 3.0 3.0 2.9 3.5 3.7 4.0 3.8 3.5 3.6 3.8 3.5 3.1 3.7 3.6 3.2 3.1 3.2 3.0 3.1 3.1 3.3 4.1 4.5
3.2 2.5 2.6 3.1 3.2 3.5 3.3 3.3 3.3 3.1 2.9 3.0 2.7 3.0 3.0 3.1 3.8 3.4 2.9 3.6 3.6 3.2 3.6 3.1 2.9 3.1 3.1 3.0 3.3
.7 1.4 1.4 1.7 1.9 2.1 2.6 2.9 2.4 2.3 2.2 2.2 2.1 1.9 2.7 2.5 3.1 2.6 2.1 1.9 2.3 2.2 2.8 2.5 1.3 1.4 1.6 .8 .5
1.0 1.4 1.6 1.8 2.3 2.7 3.1 3.2 2.7 3.0 2.9 2.6 2.2 2.0 2.6 2.5 2.6 3.0 2.9 2.4 2.7 2.3 2.5 2.5 2.7 2.7 2.5 2.1 .5 .2
3.0 3.2 3.3 3.6 3.8 4.0 4.3 4.4 4.2 3.6 3.0 2.6 2.4 3.0 3.4 3.5 3.9 3.6 3.2 3.4 3.6 3.9 3.7 3.3 3.0 2.7 2.6 2.4 2.5
2.5 2.9 3.0 3.0 3.2 3.6 4.1 3.9 4.2 3.5 3.0 2.6 2.0 2.2 2.5 2.8 2.9 3.0 2.6 3.3 3.3 3.5 3.7 3.5 3.2 2.4 2.6 2.2 2.3 2.2 2.4
2.5 2.6 2.8 3.1 3.1 3.2 3.4 3.3 3.0 3.0 2.7 1.9 1.5 2.1 2.4 2.0 2.1 2.1 2.1 2.6 3.5 3.2 3.3 3.4 3.2 3.4 3.3 1.9 1.4 1.2 2.1
3.1 3.7 4.0 4.1 4.0 4.0 4.0 3.9 3.8 3.5 2.5 2.3 2.8 2.7 2.0 2.1 2.1 2.1 2.3 2.5 3.0 3.1 3.0 3.3 3.3 3.4 3.5 3.4 3.1 2.8 2.4 1.8 2.5
3.1 3.5 3.8 3.7 3.6 3.5 3.5 3.8 3.7 3.5 3.6 2.9 2.8 2.8 3.0 2.9 3.0 2.4 2.9 2.5 2.6 3.0 3.4 3.5 3.6 3.5 3.5 3.3 3.4 3.5 3.5 3.6 3.5 3.0 3.0
2.7 3.1 3.2 3.4 2.9 2.8 2.5 3.0 2.6 2.6 2.8 2.9 2.8 3.0 2.6 2.8 2.8 2.5 2.4 2.4 2.6 3.2 2.9 3.2 3.3 2.7 2.5 2.4 2.4 2.6 2.5 2.5 2.7 2.7
1.4 1.4 1.2 1.6 1.4 1.6 1.6 1.4 1.3 1.3 .5 .8 .3 1.2 .9 1.3 1.3 2.0 1.4

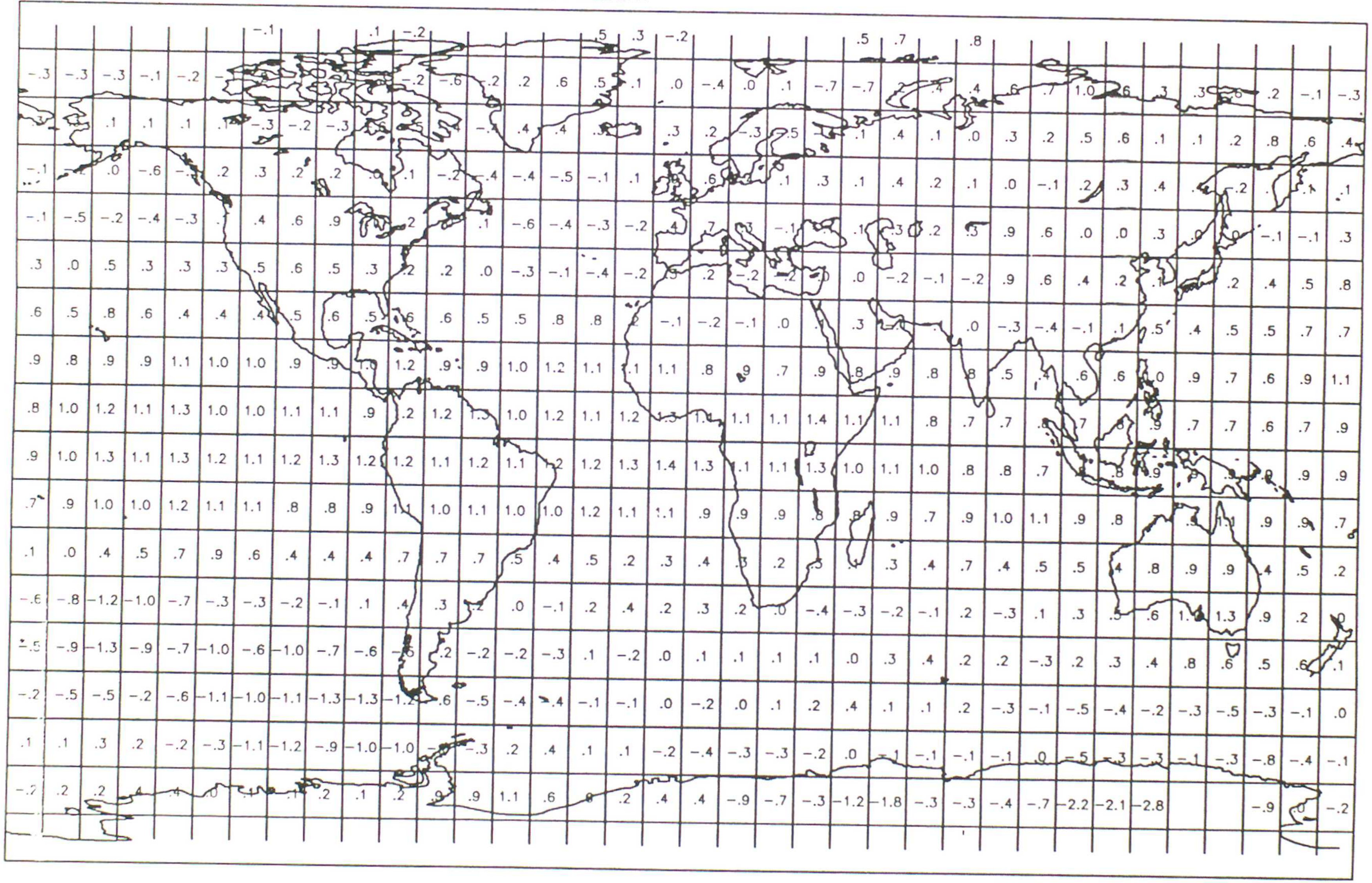
500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 850 TO 1000 HPA
APRIL 1997
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 28



500 KM SATEMS : MEAN O–B TEMPERATURE DIFFERENCES (DEG C) : 100 TO 300 HPA
APRIL 1997
NOAA–14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 29



500 KM SATEMS : MEAN O-B TEMPERATURE DIFFERENCES (DEG C) : 30 TO 50 HPA
APRIL 1997
NOAA-14, USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 30

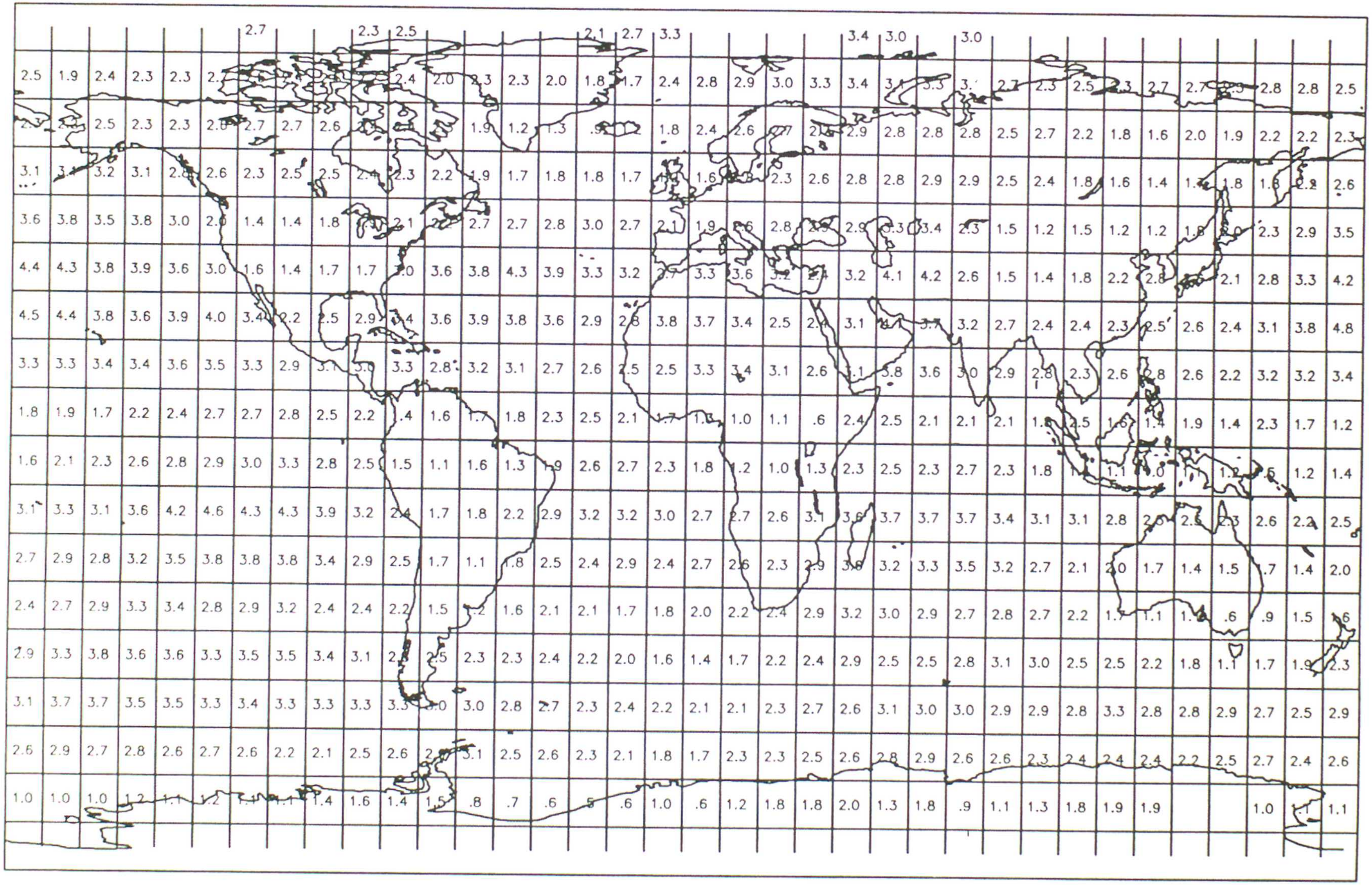

2.7 2.3 2.5 2.1 2.7 3.3 3.4 3.0 3.0
2.5 1.9 2.4 2.3 2.3 2.4 2.0 2.3 2.3 2.0 1.8 1.7 2.4 2.8 2.9 3.0 3.3 3.4 3.1 3.3 2.7 2.3 2.5 2.3 2.7 2.7 2.8 2.8 2.5
2.5 2.3 2.3 2.7 2.7 2.6 1.9 1.2 1.3 1.8 2.4 2.6 2.9 2.8 2.8 2.8 2.5 2.7 2.2 1.8 1.6 2.0 1.9 2.2 2.2 2.3
3.1 3.4 3.2 3.1 2.8 2.6 2.3 2.5 2.5 2.4 2.3 2.2 1.9 1.7 1.8 1.8 1.7 1.6 2.3 2.6 2.8 2.8 2.9 2.9 2.5 2.4 1.8 1.6 1.4 1.8 1.8 2.2 2.6
3.6 3.8 3.5 3.8 3.0 1.4 1.4 1.8 2.1 2.7 2.7 2.8 3.0 2.7 2.1 1.9 2.6 2.8 2.9 3.3 3.4 2.3 1.5 1.2 1.5 1.2 1.2 1.8 2.3 2.9 3.5
4.4 4.3 3.8 3.9 3.6 3.0 1.6 1.4 1.7 1.7 3.0 3.6 3.8 4.3 3.9 3.3 3.2 2.7 3.3 3.6 3.2 2.4 3.2 4.1 4.2 2.6 1.5 1.4 1.8 2.2 2.8 2.1 2.8 3.3 4.2
4.5 4.4 3.8 3.6 3.9 4.0 3.4 2.2 2.5 2.9 3.4 3.6 3.9 3.8 3.6 2.9 2.8 3.8 3.7 3.4 2.5 2.4 3.1 4.1 3.7 3.2 2.7 2.4 2.4 2.3 2.5 2.6 2.4 3.1 3.8 4.8
3.3 3.3 3.4 3.4 3.6 3.5 3.3 2.9 3.1 3.0 3.3 2.8 3.2 3.1 2.7 2.6 2.5 2.5 3.3 3.4 3.1 2.6 3.1 3.8 3.6 3.0 2.9 2.8 2.3 2.6 2.8 2.6 2.2 3.2 3.2 3.4
1.8 1.9 1.7 2.2 2.4 2.7 2.7 2.8 2.5 2.2 .4 1.6 1.7 1.8 2.3 2.5 2.1 1.7 1.3 1.0 1.1 .6 2.4 2.5 2.1 2.1 2.1 1.8 2.5 1.6 1.4 1.9 1.4 2.3 1.7 1.2
1.6 2.1 2.3 2.6 2.8 2.9 3.0 3.3 2.8 2.5 1.5 1.1 1.6 1.3 1.9 2.6 2.7 2.3 1.8 1.2 1.0 1.3 2.3 2.5 2.3 2.7 2.3 1.8 1.1 1.0 1.1 1.2 .5 1.2 1.4
3.1 3.3 3.1 3.6 4.2 4.6 4.3 4.3 3.9 3.2 2.4 1.7 1.8 2.2 2.9 3.2 3.2 3.0 2.7 2.7 2.6 3.1 3.6 3.7 3.7 3.7 3.4 3.1 3.1 2.8 2.5 2.3 2.6 2.2 2.5
2.7 2.9 2.8 3.2 3.5 3.8 3.8 3.8 3.4 2.9 2.5 1.7 1.1 .8 2.5 2.4 2.9 2.4 2.7 2.6 2.3 2.9 3.8 3.2 3.3 3.5 3.2 2.7 2.1 2.0 1.7 1.4 1.5 .7 1.4 2.0
2.4 2.7 2.9 3.3 3.4 2.8 2.9 3.2 2.4 2.4 2.2 1.5 .2 1.6 2.1 2.1 1.7 1.8 2.0 2.2 2.4 2.9 3.2 3.0 2.9 2.7 2.8 2.7 2.2 1.7 1.1 .6 .9 1.5 .6
2.9 3.3 3.8 3.6 3.6 3.3 3.5 3.5 3.4 3.1 2.5 2.3 2.3 2.4 2.2 2.0 1.6 1.4 1.7 2.2 2.4 2.9 2.5 2.5 2.8 3.1 3.0 2.5 2.5 2.2 1.8 1.1 1.7 1.9 2.3
3.1 3.7 3.7 3.5 3.5 3.3 3.4 3.3 3.3 3.3 3.3 3.0 3.0 2.8 2.7 2.3 2.4 2.2 2.1 2.1 2.3 2.7 2.6 3.1 3.0 3.0 2.9 2.9 2.8 3.3 2.8 2.8 2.9 2.7 2.5 2.9
2.6 2.9 2.7 2.8 2.6 2.7 2.6 2.2 2.1 2.5 2.6 3.1 2.5 2.6 2.3 2.1 1.8 1.7 2.3 2.3 2.5 2.6 2.8 2.9 2.6 2.6 2.3 2.4 2.4 2.4 2.2 2.5 2.7 2.4 2.6
1.0 1.0 1.0 1.2 1.1 1.2 1.1 1.1 1.4 1.6 1.4 1.5 .8 .7 .6 .5 .6 1.0 .6 1.2 1.8 1.8 2.0 1.3 1.8 .9 1.1 1.3 1.8 1.9 1.9 1.0 1.1 1.1

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
13903	25.9	-34.8	ALL	MSLP	SUR	222	0	0	0.9	0.9	1.2
13905	23.3	-44.5	ALL	MSLP	SUR	256	0	0	1.1	0.4	1.2
13906	14.7	-46.6	ALL	MSLP	SUR	243	0	0	1.0	0.6	1.2
13910	23.3	-42.9	ALL	MSLP	SUR	238	0	0	1.0	0.2	1.0
13911	24.7	-51.4	ALL	MSLP	SUR	250	0	0	1.1	0.7	1.3
13912	20.0	-60.5	ALL	MSLP	SUR	241	0	0	1.2	1.0	1.5
13913	19.1	-46.5	ALL	MSLP	SUR	233	0	0	1.1	0.8	1.4
13915	18.8	-44.2	ALL	MSLP	SUR	248	0	0	1.1	0.2	1.1
20502	25.0	-66.5	ALL	MSLP	SUR	1	0	0	0.0	1.3	1.3
39604	40.5	-42.5	ALL	MSLP	SUR	1	0	0	0.0	-1.0	1.0
41501	35.2	-75.6	ALL	MSLP	SUR	175	0	0	1.0	-0.2	1.1
41502	35.2	-75.7	ALL	MSLP	SUR	901	0	0	1.3	-1.4	1.9
41529	38.7	-34.3	ALL	MSLP	SUR	216	0	0	1.0	0.0	1.0
41530	34.6	-31.6	ALL	MSLP	SUR	215	0	0	1.0	0.2	1.0
41611	14.4	-55.6	ALL	MSLP	SUR	213	0	0	0.9	0.0	0.9
41612	16.6	-55.9	ALL	MSLP	SUR	237	0	0	0.9	0.3	1.0
41613	19.2	-60.1	ALL	MSLP	SUR	229	0	0	0.9	0.1	1.0
41614	14.7	-60.9	ALL	MSLP	SUR	10	0	0	0.7	-0.3	0.8
41922	23.5	-43.0	ALL	MSLP	SUR	240	0	0	1.0	1.2	1.6
41924	20.3	-56.0	ALL	MSLP	SUR	239	0	0	1.1	-0.4	1.2
44513	51.8	-25.9	ALL	MSLP	SUR	293	0	0	1.1	0.1	1.1
44605	45.2	-36.2	ALL	MSLP	SUR	583	0	0	1.3	0.5	1.3
44606	46.3	-33.1	ALL	MSLP	SUR	147	0	0	0.9	0.3	0.9
44607	49.7	-32.9	ALL	MSLP	SUR	622	0	0	1.2	0.4	1.3
44608	53.7	-27.5	ALL	MSLP	SUR	650	0	0	0.9	0.7	1.2
44613	56.5	-32.3	ALL	MSLP	SUR	535	1	0	1.1	0.2	1.1
44614	65.7	-29.4	ALL	MSLP	SUR	967	5	1	1.4	0.1	1.4
44624	58.0	-18.8	ALL	MSLP	SUR	1084	3	0	1.1	0.5	1.2
44726	58.2	-8.0	ALL	MSLP	SUR	986	4	0	1.1	0.3	1.1
44727	56.5	-41.3	ALL	MSLP	SUR	800	6	1	1.0	0.0	1.0
44728	62.9	-22.1	ALL	MSLP	SUR	1151	3	0	1.4	0.3	1.4
44742	46.4	-26.3	ALL	MSLP	SUR	510	0	0	1.0	0.1	1.0
44743	51.3	-17.0	ALL	MSLP	SUR	726	4	1	1.0	0.3	1.0
44760	27.8	-61.9	ALL	MSLP	SUR	309	0	0	1.1	0.0	1.1
44762	46.5	-28.1	ALL	MSLP	SUR	504	0	0	1.0	0.2	1.0
44764	60.7	-21.3	ALL	MSLP	SUR	139	0	0	1.2	0.4	1.3
44767	62.8	-8.8	ALL	MSLP	SUR	1276	169	13	7.1	-0.4	7.1
44768	57.5	-37.7	ALL	MSLP	SUR	774	0	0	1.1	0.4	1.1
44769	52.3	-46.5	ALL	MSLP	SUR	321	0	0	1.0	0.3	1.0
44770	28.1	-72.9	ALL	MSLP	SUR	535	3	1	1.1	0.2	1.1
44775	59.8	-34.6	ALL	MSLP	SUR	809	0	0	0.9	0.7	1.1
44776	57.9	-6.9	ALL	MSLP	SUR	780	3	0	1.2	0.2	1.2
44779	46.6	-39.8	ALL	MSLP	SUR	691	2	0	1.5	0.3	1.5
44780	55.2	-8.1	ALL	MSLP	SUR	128	0	0	0.9	0.4	1.0
44911	55.8	-22.4	ALL	MSLP	SUR	50	0	0	0.8	0.8	1.1
44912	53.4	-51.2	ALL	MSLP	SUR	112	0	0	1.7	1.2	2.1
44917	56.8	-56.2	ALL	MSLP	SUR	284	0	0	1.9	1.6	2.5
44925	58.9	-50.4	ALL	MSLP	SUR	94	0	0	1.2	1.0	1.6
61529	36.5	-6.8	ALL	MSLP	SUR	780	0	0	0.9	-0.6	1.1
62503	36.3	-16.1	ALL	MSLP	SUR	555	0	0	0.7	0.0	0.7
62507	36.3	-19.1	ALL	MSLP	SUR	630	0	0	1.0	0.5	1.1
62508	51.7	-13.3	ALL	MSLP	SUR	646	1	0	0.7	0.5	0.9
62515	45.8	-15.1	ALL	MSLP	SUR	624	0	0	0.7	0.3	0.8
62518	43.7	-16.5	ALL	MSLP	SUR	149	0	0	1.6	-0.3	1.6
62551	45.9	-7.1	ALL	MSLP	SUR	42	0	0	0.8	0.5	0.9
62552	51.5	-19.1	ALL	MSLP	SUR	367	0	0	1.3	-0.4	1.4
62553	46.8	-20.1	ALL	MSLP	SUR	337	3	1	1.4	0.1	1.4
62554	48.0	-20.7	ALL	MSLP	SUR	318	0	0	0.8	0.2	0.9
62555	49.9	-19.1	ALL	MSLP	SUR	370	0	0	0.9	0.1	0.9
62556	47.5	-21.2	ALL	MSLP	SUR	376	0	0	0.9	0.2	0.9

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
62697	62.3	-14.4	ALL	MSLP	SUR	1145	4	0	1.4	0.4	1.4
62712	50.6	-27.3	ALL	MSLP	SUR	614	0	0	1.1	0.2	1.1
62713	44.0	-30.5	ALL	MSLP	SUR	678	0	0	1.2	0.2	1.2
62803	59.2	-13.8	ALL	MSLP	SUR	1662	5	0	1.3	0.3	1.3
62804	52.9	-20.9	ALL	MSLP	SUR	583	0	0	0.9	0.0	0.9
62927	48.1	-23.2	ALL	MSLP	SUR	107	0	0	0.8	0.8	1.1
64561	58.0	-48.4	ALL	MSLP	SUR	893	4	0	1.5	0.2	1.5
64562	63.0	-22.9	ALL	MSLP	SUR	673	0	0	3.5	-1.1	3.6
64563	62.9	-32.8	ALL	MSLP	SUR	1220	3	0	1.0	0.2	1.0
65593	62.8	-21.6	ALL	MSLP	SUR	750	29	4	2.0	-0.5	2.0
65594	62.4	-20.3	ALL	MSLP	SUR	1838	7	0	1.4	0.3	1.4
65595	63.5	-18.4	ALL	MSLP	SUR	373	0	0	1.6	-2.2	2.7
65596	58.9	-55.7	ALL	MSLP	SUR	705	2	0	1.4	0.2	1.4
65597	61.2	-38.8	ALL	MSLP	SUR	1104	2	0	0.8	0.3	0.9
65598	63.0	-37.4	ALL	MSLP	SUR	1518	7	0	1.5	-0.4	1.5
65599	55.5	-17.6	ALL	MSLP	SUR	606	1	0	1.0	0.3	1.0
WIND SPEED											
20502	25.0	-66.5	ALL	SPEED	SUR	1	0	0	0.0	0.9	0.9
39604	40.5	-42.5	ALL	SPEED	SUR	1	0	0	0.0	2.9	2.9
41530	34.6	-31.6	ALL	SPEED	SUR	209	0	0	1.5	-2.0	2.5
41611	14.4	-55.6	ALL	SPEED	SUR	206	0	0	1.2	0.7	1.4
41612	16.6	-55.9	ALL	SPEED	SUR	232	0	0	1.3	-1.0	1.7
41613	19.2	-60.1	ALL	SPEED	SUR	192	0	0	1.4	-0.6	1.5
41614	14.7	-60.9	ALL	SPEED	SUR	10	0	0	0.6	-6.2	6.2
44513	51.8	-25.9	ALL	SPEED	SUR	289	0	0	1.7	-2.6	3.1
44624	58.0	-18.8	ALL	SPEED	SUR	769	2	0	1.6	-1.1	2.0
44726	58.2	-8.0	ALL	SPEED	SUR	704	0	0	1.9	-1.1	2.2
44742	46.4	-26.3	ALL	SPEED	SUR	322	0	0	1.8	-0.3	1.8
44762	46.5	-28.1	ALL	SPEED	SUR	315	0	0	1.9	-0.6	2.0
62518	43.7	-16.5	ALL	SPEED	SUR	297	0	0	2.7	-2.7	3.9
62551	45.9	-7.1	ALL	SPEED	SUR	20	0	0	2.0	1.2	2.3
62552	51.5	-19.1	ALL	SPEED	SUR	363	0	0	1.7	-1.3	2.1
62553	46.8	-20.1	ALL	SPEED	SUR	336	0	0	2.2	-0.5	2.2
62697	62.3	-14.4	ALL	SPEED	SUR	518	0	0	2.8	-0.4	2.8
62803	59.2	-13.8	ALL	SPEED	SUR	508	3	1	2.9	-5.4	6.1
64517	74.2	-8.3	ALL	SPEED	SUR	259	1	0	5.2	-1.3	5.4
WIND DIRECTION											
20502	25.0	-66.5	ALL	DIRN.	SUR	1	0	0	0.0	-15.7	15.7
39604	40.5	-42.5	ALL	DIRN.	SUR	1	0	0	0.0	-5.9	5.9
41530	34.6	-31.6	ALL	DIRN.	SUR	170	0	0	21.0	5.0	21.6
41611	14.4	-55.6	ALL	DIRN.	SUR	176	0	0	32.4	19.2	37.7
41612	16.6	-55.9	ALL	DIRN.	SUR	154	0	0	17.6	2.4	17.7
41613	19.2	-60.1	ALL	DIRN.	SUR	133	0	0	15.6	8.4	17.7
41614	14.7	-60.9	ALL	DIRN.	SUR	10	0	0	5.0	3.3	6.0
44513	51.8	-25.9	ALL	DIRN.	SUR	262	0	0	64.3	-59.6	87.7
44624	58.0	-18.8	ALL	DIRN.	SUR	606	2	0	19.4	12.8	23.3
44726	58.2	-8.0	ALL	DIRN.	SUR	530	0	0	24.7	-4.0	25.0
44742	46.4	-26.3	ALL	DIRN.	SUR	270	0	0	20.0	-13.4	24.0
44762	46.5	-28.1	ALL	DIRN.	SUR	262	0	0	19.0	-10.6	21.7
62518	43.7	-16.5	ALL	DIRN.	SUR	235	0	0	41.1	-21.0	46.1
62551	45.9	-7.1	ALL	DIRN.	SUR	14	0	0	17.4	-8.9	19.6
62552	51.5	-19.1	ALL	DIRN.	SUR	361	0	0	12.1	5.3	13.2
62553	46.8	-20.1	ALL	DIRN.	SUR	309	0	0	26.8	4.0	27.1
62697	62.3	-14.4	ALL	DIRN.	SUR	450	0	0	19.9	-3.4	20.2
62803	59.2	-13.8	ALL	DIRN.	SUR	406	3	1	58.4	-2.5	58.4
64517	74.2	-8.3	ALL	DIRN.	SUR	243	1	0	39.4	-5.5	39.8

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:40°N - 70°N, 60°W - 0°W.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in $m\ s^{-1}$
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.
GROSS ERROR LIMITS	:10.0 °C ; 60 $m\ s^{-1}$ Vector Wind	
SELECTION CRITERIA	:N REP $\geq$ 20	

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	3131	1	2	1.8	0.1	3145	0	2	0	7.0	0.9
ACA	1326	1	1	1.8	0.0	1361	0	1	1	5.6	0.3
AEA	365	1	26	2.7	0.5	354	1	4	0	8.5	1.5
AEL	428	0	1	1.8	-0.4	432	0	4	0	9.0	0.9
AEY	43	0	2	1.7	0.7	42	0	5	0	7.1	0.8
AFL	77	0	1	1.8	0.5	79	0	3	0	7.9	1.9
AFR	944	1	5	1.8	0.2	972	0	6	0	7.1	0.9
AIH	118	0	6	1.9	-0.1	118	0	8	0	7.7	1.4
AJM	42	0	2	1.5	0.1	43	2	7	0	9.7	-0.8
AMX	167	1	5	2.1	-0.3	165	1	7	0	10.7	0.8
ANZ	211	0	1	1.8	-0.8	211	0	2	1	6.4	-0.2
AOM	287	1	3	1.8	1.0	291	0	3	0	7.5	1.1
ATN	36	0	8	2.2	-1.8	37	0	100	0	22.6	8.4
AUA	60	0	2	1.9	-0.6	63	0	5	0	7.3	2.2
AVA	82	4	6	2.3	0.3	84	0	0	0	7.5	1.2
AZA	532	1	3	2.1	0.4	543	0	3	1	7.3	1.3
BAL	285	0	20	2.2	-0.5	289	0	20	0	7.7	1.2
BAW	1293	0	11	1.9	0.0	1328	0	13	1	7.5	0.7
BBB	47	0	0	1.6	0.2	48	0	2	0	7.6	-0.1
BWA	91	1	3	2.8	2.1	91	0	1	0	7.9	0.9
CDN	337	0	1	1.5	0.1	342	0	2	0	5.7	0.6
CFG	683	0	2	2.3	-1.0	689	0	2	0	8.4	0.5
CKT	53	0	6	1.6	0.5	51	0	8	0	9.0	0.9
CLX	228	0	0	1.7	-0.6	231	0	2	0	6.3	1.2
CMM	95	1	0	1.2	0.2	92	0	1	0	7.8	0.9
COA	535	1	4	2.1	0.8	539	0	4	1	8.1	0.8
CRL	301	1	2	1.9	0.2	309	0	1	0	7.4	1.1
CSA	23	0	4	2.7	0.7	23	0	4	0	7.4	1.8
CTB	119	2	5	2.2	0.1	122	0	4	1	6.5	1.5
CTM	30	0	13	1.9	-0.5	30	0	13	0	6.7	1.1
CUB	271	0	8	2.3	1.0	270	0	100	0	9.8	1.7
DAF	21	0	0	1.5	-0.1	22	5	5	0	7.2	1.5
DAL	2839	0	1	1.9	0.2	2877	0	2	0	7.7	0.8
DHL	172	5	100	3.8	-1.7	169	0	100	1	9.5	0.2
DLH	2422	0	6	1.9	0.2	2447	0	9	4	6.8	0.7
DOA	47	0	2	1.8	-0.4	47	0	4	0	7.7	-1.1
ELY	166	0	7	1.8	-0.2	176	0	9	1	7.6	1.0
EWW	163	8	18	3.0	1.1	165	1	100	0	14.9	4.5
FDX	251	1	2	1.5	0.6	251	0	2	0	7.0	1.3
FIN	341	0	2	1.8	0.4	339	0	2	1	6.4	0.7
GAF	102	1	2	2.5	0.3	105	0	3	0	7.2	-0.4
HLF	152	1	3	2.0	-0.7	146	0	25	0	7.9	1.2
IBE	1144	3	25	2.4	0.3	1147	0	24	0	9.4	1.3
ICE	716	0	1	1.7	0.1	713	0	2	0	6.9	0.6
JAL	23	4	4	2.1	0.4	23	0	4	0	12.3	-1.7
KLM	2297	0	3	2.1	0.5	2336	0	3	1	7.2	0.8
LDA	155	0	6	2.0	-1.1	156	0	10	1	8.6	0.9
LDI	269	0	20	2.1	-1.0	271	0	21	0	9.0	1.0
LIB	92	1	2	2.0	1.0	93	0	2	0	9.7	1.4
LKR	40	0	3	1.9	0.9	40	0	5	0	6.5	2.1
LOT	319	0	1	1.8	-0.9	315	0	1	1	6.0	0.1
LTU	749	0	3	2.0	0.0	745	0	3	0	8.2	1.0
MPH	579	0	2	2.1	-0.5	596	0	2	0	7.5	0.7
NCA	20	0	5	2.7	-0.2	20	0	0	0	8.7	-1.0
NWA	2388	1	2	2.0	0.7	2449	0	2	1	7.3	0.8
PAC	39	0	0	1.5	0.2	39	0	3	0	7.6	0.5
PIA	36	3	6	2.3	0.5	38	0	5	0	8.3	2.6
RAM	24	4	4	2.4	-0.5	24	0	0	0	6.5	0.1
RCH	157	6	100	2.9	1.0	160	0	100	0	10.5	2.0

IDENT.	TEMPERATURE					WIND					
	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
RJA	81	0	1	1.6	0.5	83	0	2	0	8.1	-0.1
RRR	49	0	6	2.3	0.8	48	0	8	2	6.5	-0.2
SAA	21	0	19	2.5	2.3	21	0	19	0	5.9	0.9
SAB	36	0	6	1.6	0.8	38	0	8	0	7.8	1.9
SAS	937	0	1	1.8	0.0	933	0	2	0	6.7	0.3
SIA	53	0	8	2.3	-0.5	55	0	7	0	7.8	-0.1
SLR	57	2	30	2.3	-0.4	57	0	26	0	8.8	2.7
SPP	156	1	7	2.1	-0.4	150	1	6	0	8.7	2.3
SVA	102	0	8	2.2	0.1	110	0	100	0	11.8	3.3
SWR	172	0	6	2.0	0.4	174	0	7	0	7.8	0.6
TAP	286	0	1	2.0	-0.1	292	0	3	0	9.6	1.5
TEJ	46	0	15	1.7	0.7	49	0	20	0	11.2	2.4
TSC	42	0	5	2.5	0.4	43	0	0	0	6.5	2.1
TWA	1098	0	1	2.1	-0.1	1099	0	2	0	7.9	1.1
TWE	26	0	4	1.8	0.7	27	0	7	0	13.2	-4.4
UAL	1477	0	1	1.9	-0.5	1483	0	1	0	6.4	0.3
ULE	188	0	1	1.7	0.4	191	0	3	0	9.0	1.6
UPS	133	1	18	2.4	0.4	135	0	16	0	7.9	0.3
USA	334	1	1	2.0	-0.2	336	0	3	0	8.5	1.4
VIR	204	0	1	1.8	-0.6	206	0	1	0	6.9	1.2
BA	6215	0	11	1.4	0.4	6214	0	11	0	6.2	1.0
IT	64	0	0	0.8	0.1	64	0	0	0	5.3	-0.8
KL	3388	0	13	1.3	0.6	3388	0	13	0	5.8	0.7
LH	246	0	0	1.8	0.3	244	0	2	2	5.8	0.9
SV	44	0	0	1.3	0.8	44	0	2	0	10.5	3.9
N	212	4	100	2.8	1.3	224	0	4	1	7.9	0.0

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	19	0	17.5	19.3	8.2
DBBH	12	Z	100	16	0	18.1	18.9	5.6
DBLK	00	Z	100	1	0	0.0	35.0	35.0
DBLK	12	Z	100	10	0	19.7	31.2	24.2
EHOA	12	Z	100	5	0	13.5	17.3	10.8
FNOR	00	Z	100	13	0	11.3	16.4	11.8
FNOR	12	Z	100	11	0	19.7	19.9	2.6
FNOU	00	Z	100	11	0	13.1	22.1	17.8
FNOU	12	Z	100	9	0	11.2	13.2	7.0
FNPH	00	Z	100	8	0	15.3	15.6	-2.6
FNPH	12	Z	100	9	0	9.6	9.7	-1.4
FNRS	00	Z	100	17	0	14.4	14.5	1.8
FNRS	12	Z	100	15	0	14.3	14.3	0.6
JBOA	00	Z	100	1	0	0.0	18.0	18.0
JCCX	00	Z	100	1	0	0.0	2.0	2.0
LDWR	00	Z	100	30	0	19.0	30.1	23.4
LDWR	12	Z	100	28	0	15.3	25.0	19.8
OXTS2	00	Z	100	10	0	14.8	15.1	2.8
OXTS2	12	Z	100	11	0	18.7	21.0	9.7
OXYH2	00	Z	100	18	0	35.6	36.0	-5.2
OXYH2	12	Z	100	18	0	16.7	21.8	14.0
SHIP	00	Z	100	1	0	0.0	3.0	3.0
SHIPAF	00	Z	100	1	0	0.0	51.0	51.0
SHIPS	00	Z	100	1	0	0.0	6.0	6.0
SHIPS	12	Z	100	1	0	0.0	72.0	72.0
UCKZ	00	Z	100	8	0	11.7	48.6	47.1
V2EZ	00	Z	100	12	0	22.4	22.4	-2.0
V2EZ	12	Z	100	7	0	42.1	45.0	15.9
V2GH	00	Z	100	12	0	29.9	31.4	-9.7
V2GH	12	Z	100	12	0	42.9	42.9	-2.1
V2LV	00	Z	100	7	0	12.6	15.5	9.0
V2LV	12	Z	100	4	0	4.8	7.5	5.8
WTEA	00	Z	100	1	0	0.0	19.0	19.0
WTEU	00	Z	100	1	0	0.0	13.0	-13.0
XXOA	00	Z	100	1	0	0.0	60.0	60.0
XXOA	12	Z	100	1	0	0.0	58.0	58.0
ZDLG	12	Z	100	9	0	9.1	17.0	14.3
03953	00	Z	100	29	0	11.9	15.5	9.9
03953	12	Z	100	27	0	12.0	13.9	7.0
04018	00	Z	100	29	0	18.5	30.8	24.6
04018	12	Z	100	29	0	15.3	42.5	39.7
04220	00	Z	100	30	0	23.6	24.0	4.3
04220	12	Z	100	29	0	20.8	26.2	15.9
04270	00	Z	100	29	0	21.5	21.6	1.1
04270	12	Z	100	30	0	16.8	16.9	1.2
04339	00	Z	100	30	0	22.7	29.4	18.7
04339	12	Z	100	27	0	19.0	32.4	26.3
04360	00	Z	100	29	0	16.9	16.9	-0.1
04360	12	Z	100	29	0	11.6	12.6	4.9
08001	00	Z	100	28	0	10.0	12.0	6.6
08001	12	Z	100	26	0	22.5	22.6	1.8
08508	00	Z	100	29	0	16.9	17.0	1.5
08508	12	Z	100	30	0	16.1	16.7	4.3
08522	00	Z	100	27	0	14.5	21.3	15.6
08522	12	Z	100	30	0	10.5	14.1	9.4
60020	00	Z	100	28	0	15.0	24.5	19.4
60020	12	Z	100	29	0	18.7	21.0	9.6
71600	00	Z	100	29	0	9.7	11.6	6.4
71600	12	Z	100	29	0	11.1	14.3	8.9
72201	00	Z	100	28	0	26.3	39.8	29.8
72201	12	Z	100	27	0	29.1	48.2	38.5

```
 WMO   OBS                NUM   NUM
IDENT TIME ELM   LEV     OBS   GROSS      SD      RMS     BIAS

72402  00   Z    100     28      0       28.3    29.3      7.6
72402  12   Z    100     27      0       25.9    35.7     24.6
74494  00   Z    100     17      0       15.9    16.0      1.4
74494  12   Z    100     19      0       24.2    50.3     44.1

78016  12   Z    100     25      0       14.4    18.9     12.2
```

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	20	0	8.0	9.3	4.7
DBBH	12	Z	500	15	1	8.3	9.8	5.2
DBLK	00	Z	500	1	0	0.0	30.0	30.0
DBLK	12	Z	500	10	0	14.3	17.8	10.6
EHOA	12	Z	500	6	0	7.8	16.3	14.3
FNOR	00	Z	500	14	0	11.0	17.2	13.3
FNOR	12	Z	500	11	0	10.1	15.0	11.1
FNOU	00	Z	500	11	0	12.7	17.8	12.5
FNOU	12	Z	500	9	0	9.1	14.8	11.7
FNPH	00	Z	500	8	0	14.0	14.6	4.1
FNPH	12	Z	500	9	0	8.5	8.8	-2.3
FNRS	00	Z	500	17	0	7.4	9.2	5.5
FNRS	12	Z	500	15	0	9.6	12.7	8.3
JBOA	00	Z	500	1	0	0.0	5.0	5.0
JCCX	00	Z	500	1	0	0.0	5.0	5.0
LDWR	00	Z	500	30	0	20.6	25.2	14.5
LDWR	12	Z	500	29	0	16.4	20.2	11.8
OXTS2	00	Z	500	14	0	16.4	16.7	3.2
OXTS2	12	Z	500	11	0	12.2	12.7	3.6
OXYH2	00	Z	500	18	0	13.9	16.4	8.6
OXYH2	12	Z	500	18	0	10.7	16.1	12.0
SHIP	00	Z	500	1	0	0.0	8.0	-8.0
SHIP	12	Z	500	1	0	0.0	19.0	19.0
SHIPAF	00	Z	500	1	0	0.0	5.0	-5.0
SHIPS	00	Z	500	1	0	0.0	6.0	-6.0
SHIPS	12	Z	500	1	0	0.0	5.0	5.0
UCKZ	00	Z	500	8	0	5.9	24.7	24.0
V2EZ	00	Z	500	12	0	22.7	23.4	5.4
V2EZ	12	Z	500	7	0	20.8	26.0	15.7
V2GH	00	Z	500	19	0	15.7	20.4	-13.1
V2GH	12	Z	500	22	0	20.0	22.1	-9.4
V2LV	00	Z	500	8	0	11.5	15.7	10.8
V2LV	12	Z	500	7	0	11.7	15.4	10.0
WTEA	00	Z	500	1	0	0.0	18.0	18.0
WTEU	00	Z	500	1	0	0.0	9.0	-9.0
XXOA	00	Z	500	1	0	0.0	13.0	13.0
XXOA	12	Z	500	8	0	13.9	15.0	5.8
ZDLG	12	Z	500	9	0	7.0	16.3	14.8
03953	00	Z	500	30	0	7.7	16.6	14.7
03953	12	Z	500	29	0	9.4	14.0	10.4
04018	00	Z	500	30	0	11.3	21.3	18.0
04018	12	Z	500	29	0	10.9	17.4	13.6
04220	00	Z	500	30	0	16.5	17.9	-6.8
04220	12	Z	500	29	0	18.0	18.2	-2.5
04270	00	Z	500	30	0	13.6	18.4	12.4
04270	12	Z	500	30	0	10.5	12.4	6.6
04339	00	Z	500	30	0	23.0	23.0	1.5
04339	12	Z	500	29	0	15.6	15.8	2.5
04360	00	Z	500	29	0	12.4	15.8	9.8
04360	12	Z	500	29	0	12.2	12.8	3.7
08001	00	Z	500	30	0	8.6	12.8	9.5
08001	12	Z	500	29	0	16.4	16.5	1.2
08508	00	Z	500	30	0	11.1	15.0	10.0
08508	12	Z	500	30	0	13.7	16.8	9.8
08522	00	Z	500	28	0	13.0	20.3	15.6
08522	12	Z	500	30	0	13.7	19.1	13.3
60020	00	Z	500	28	0	13.4	23.7	19.5
60020	12	Z	500	29	0	13.9	25.5	21.4
71600	00	Z	500	29	0	16.1	17.2	-6.0
71600	12	Z	500	30	0	8.6	8.6	-0.5
72201	00	Z	500	29	0	18.8	25.5	17.2

```
  WMO   OBS                    NUM    NUM
IDENT  TIME  ELM   LEV     OBS   GROSS       SD      RMS     BIAS

72201   12    Z    500     27      0        7.4     13.7     11.6
72402   00    Z    500     28      0        8.7      8.9     -2.1
72402   12    Z    500     29      0        8.2      8.5      2.2
74494   00    Z    500     29      0       13.4     13.7      2.6

74494   12    Z    500     29      0       18.7     19.7      6.2
78016   12    Z    500     24      0        8.3     10.4      6.3
```

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	19	0	0	0.0	-3.1	0.2
DBBH	12	V	100	16	0	0	4.6	-0.5	-0.3
DBLK	00	V	100	1	0	0	3.5	9.5	-1.4
DBLK	12	V	100	9	0	0	3.5	1.0	-0.5
EHOA	12	V	100	5	0	0	3.3	0.2	-1.0
FNOR	00	V	100	13	0	0	3.3	0.1	0.7
FNOR	12	V	100	10	0	0	2.8	0.4	1.6
FNOU	00	V	100	11	0	0	3.3	-0.3	-1.5
FNOU	12	V	100	9	0	0	4.1	-0.5	0.7
FNPH	00	V	100	8	0	0	4.1	0.9	-0.3
FNPH	12	V	100	9	0	0	4.1	1.1	0.1
FNRS	00	V	100	17	0	0	4.1	1.3	-1.3
FNRS	12	V	100	15	0	0	3.7	-0.2	-0.3
JBOA	00	V	100	1	0	0	2.9	1.9	0.5
JCCX	00	V	100	1	0	0	2.9	1.5	-2.9
LDWR	00	V	100	30	0	0	2.9	-0.5	0.6
LDWR	12	V	100	28	0	0	2.2	-1.2	-0.1
OXTS2	00	V	100	8	0	0	2.0	1.6	0.7
OXTS2	12	V	100	11	0	0	2.0	-1.1	0.4
OXYH2	00	V	100	17	0	0	3.1	-1.1	-0.1
OXYH2	12	V	100	18	0	0	2.2	-1.0	0.4
SHIP	00	V	100	1	0	0	2.8	1.6	4.1
UCKZ	00	V	100	8	0	0	2.8	0.1	-0.3
V2EZ	00	V	100	12	0	0	2.8	0.0	-0.7
V2EZ	12	V	100	7	0	0	2.1	0.6	-0.7
V2GH	00	V	100	12	0	0	2.1	1.3	-0.7
V2GH	12	V	100	12	0	0	3.6	0.1	1.2
V2LV	00	V	100	7	0	0	3.0	2.5	1.9
V2LV	12	V	100	4	0	0	3.0	0.6	1.3
WTEA	00	V	100	1	0	0	3.0	-1.9	2.0
WTEU	00	V	100	1	0	0	3.0	2.8	3.0
ZDLG	12	V	100	9	0	0	4.0	-0.1	2.3
03953	00	V	100	29	0	0	2.5	-0.8	0.9
03953	12	V	100	27	0	0	2.4	-0.8	1.1
04018	00	V	100	28	0	0	2.6	-2.4	0.3
04018	12	V	100	29	0	0	3.1	-1.0	-1.4
04220	00	V	100	30	0	0	3.3	0.3	2.0
04220	12	V	100	29	0	0	2.6	0.1	1.0
04270	00	V	100	29	0	0	2.2	0.0	0.9
04270	12	V	100	30	0	0	3.3	0.5	1.1
04339	00	V	100	30	0	0	2.7	-0.8	0.9
04339	12	V	100	27	0	0	3.0	-1.2	0.7
04360	00	V	100	29	0	0	2.4	-0.9	0.6
04360	12	V	100	27	0	0	2.1	0.5	-0.3
08001	00	V	100	26	0	0	3.6	0.3	1.2
08001	12	V	100	24	0	0	1.9	-1.4	1.5
08508	00	V	100	29	0	0	2.7	2.0	-1.2
08508	12	V	100	30	0	0	2.4	-0.8	-1.2
08522	00	V	100	27	0	0	3.2	0.4	0.0
08522	12	V	100	30	0	0	2.7	-0.7	-0.2
60020	00	V	100	28	0	0	5.2	1.3	0.0
60020	12	V	100	29	0	0	3.1	-1.7	-0.8
71600	00	V	100	29	0	0	3.9	1.1	-0.3
71600	12	V	100	29	0	0	2.8	1.1	-0.3
72201	00	V	100	27	0	0	2.2	-0.8	2.5
72201	12	V	100	26	0	0	4.0	-0.4	-1.3
72402	00	V	100	28	0	0	2.8	0.6	0.0
72402	12	V	100	26	0	0	3.1	-0.6	0.7
74494	00	V	100	14	0	0	2.6	0.6	0.9
74494	12	V	100	17	0	0	2.1	0.0	0.9
78016	12	V	100	24	0	0	6.4	-0.5	-0.1

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: April, 1997

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	500	20	0	5	0.0	-5.4	0.4
DBBH	12	V	500	16	0	0	4.6	-2.1	-0.1
DBLK	00	V	500	1	0	0	4.4	-2.3	1.4
DBLK	12	V	500	10	0	0	4.4	-0.1	-0.9
EHOA	12	V	500	6	0	0	3.5	-3.9	1.5
FNOR	00	V	500	14	0	0	3.5	1.2	-0.7
FNOR	12	V	500	10	0	0	3.2	-0.5	-0.8
FNOU	00	V	500	11	0	0	2.5	-1.1	-0.3
FNOU	12	V	500	9	0	0	2.1	-0.6	-0.1
FNPH	00	V	500	8	0	12	2.1	2.5	-1.6
FNPH	12	V	500	9	0	0	2.1	-0.3	0.1
FNRS	00	V	500	17	0	0	2.1	0.3	-0.2
FNRS	12	V	500	15	0	0	2.4	-1.5	0.7
JBOA	00	V	500	1	0	0	2.3	-3.6	1.5
JCCX	00	V	500	1	0	100	2.3	2.7	-12.9
LDWR	00	V	500	30	0	0	2.3	0.2	0.3
LDWR	12	V	500	29	0	0	4.4	-0.2	0.6
OXTS2	00	V	500	13	0	0	3.7	1.0	1.6
OXTS2	12	V	500	11	0	0	5.2	-0.4	1.2
OXYH2	00	V	500	18	0	0	2.9	-0.4	2.9
OXYH2	12	V	500	18	0	0	4.3	-0.1	-0.6
SHIP	00	V	500	1	0	0	2.5	-1.7	5.8
UCKZ	00	V	500	8	0	0	2.5	-0.7	-0.7
V2EZ	00	V	500	12	0	0	2.5	0.2	0.6
V2EZ	12	V	500	7	0	0	5.7	-0.5	0.3
V2GH	00	V	500	19	0	0	5.7	0.2	0.4
V2GH	12	V	500	22	0	0	4.0	-0.9	0.4
V2LV	00	V	500	8	0	0	2.4	2.2	-0.4
V2LV	12	V	500	7	0	0	2.4	-0.1	-1.0
WTEA	00	V	500	1	0	0	2.4	1.3	-2.2
WTEU	00	V	500	1	0	0	2.4	3.2	0.4
XXOA	00	V	500	1	0	0	2.9	-1.6	-1.5
XXOA	12	V	500	1	0	0	2.9	-4.2	-0.5
ZDLG	12	V	500	9	0	0	2.9	-0.2	0.6
03953	00	V	500	30	0	0	2.9	0.7	-0.2
03953	12	V	500	29	0	0	2.8	-0.4	-0.1
04018	00	V	500	29	0	0	2.2	-0.2	-0.1
04018	12	V	500	29	0	0	4.8	-0.1	-0.9
04220	00	V	500	30	0	0	5.3	0.7	1.6
04220	12	V	500	29	0	0	4.8	0.4	0.0
04270	00	V	500	30	0	0	3.7	-0.2	2.0
04270	12	V	500	30	0	0	4.2	0.3	0.4
04339	00	V	500	30	0	0	4.6	1.3	0.3
04339	12	V	500	26	0	0	4.0	1.5	2.1
04360	00	V	500	29	0	0	5.3	0.6	0.6
04360	12	V	500	28	0	0	3.5	-0.5	-0.5
08001	00	V	500	30	0	0	3.9	0.9	-0.4
08001	12	V	500	29	0	0	2.3	-1.6	-1.0
08508	00	V	500	30	0	0	2.9	0.6	-0.4
08508	12	V	500	30	0	0	5.5	-0.8	-0.7
08522	00	V	500	28	0	0	3.8	0.0	-0.4
08522	12	V	500	30	0	0	2.4	-1.3	-1.1
60020	00	V	500	28	0	0	2.6	-0.8	0.0
60020	12	V	500	29	0	0	4.4	-0.7	0.4
71600	00	V	500	29	0	0	2.8	0.8	-0.8
71600	12	V	500	30	0	0	4.0	1.8	0.6
72201	00	V	500	29	0	0	2.6	0.1	1.1
72201	12	V	500	27	0	0	2.7	0.1	0.8
72402	00	V	500	28	0	0	3.5	1.5	0.1
72402	12	V	500	28	0	0	4.2	-1.0	0.8
74494	00	V	500	29	0	0	3.4	0.0	0.7
74494	12	V	500	29	0	0	3.3	0.1	-0.7
78016	12	V	500	24	0	0	3.2	-0.3	1.2

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45